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THE GYPONIDAE AND LEDRIDAE OF CUBA

By Z. P. METCALF and S. C. BRUNER

This is one of a series of papers devoted to the homopterous fauna of Cuba. Previous published papers include Metcalf and Bruner 1925a on the Cercopidae, 1925b on the Membracidae, 1930a on the Tropiduchidae and Acanaloniidae, 1936a on the Cicadellidae, 1944a on the Cercopidae and 1948a on the Flatidae.

The Gyponidae constitute a fairly large family of leaf hoppers of relatively large size and are usually greenish or yellowish green in color, frequently without conspicuous color markings. The head is generally large, nearly as broad as the pronotum with the crown usually broad and flat with a distinct pair of ocelli. The pronotum is usually large with distinct anterior and posterior margins and the lateral margins divided into anterior and posterior regions by distinct humeral angles. The tegmina are large, macropterous and usually coriaceous or translucent; subcosta is unbranched and marginal, radius two-branched, medius unbranched, cubitus one is branched near the apex setting off a distinct cell beyond the apex of the clavus. In most genera there are two rows of fairly regular transverse veins which usually make a series of five apical cells including the radial and cubital cells and a row of three subapical cells. In the genera *Rugosana* De Long and *Gyponana* Ball the venation is more or less reticulate, especially apically. The claval suture is distinct and the claval veins are usually connected by a transverse vein near the base.

The wings are usually large with radius and media two-branched; cubitus one and two conspicuous. There are three anals with anals one and two usually united for half their length at the base. The legs are usually stout; hind tibiae quadrangular; with the outer anterior and posterior and the inner anterior margins set with numerous stout spines, and the inner posterior

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margin with numerous fine spines. The male genitalia seem to be specifically distinct. The pygofer is saddle-shaped; the anal segment rather large; the anal style small. The genital plates are usually flat, more or less quadrangular. The genital styles are usually elongate, narrow. The aedeagus is usually elongate and most frequently has a pair of elongate basal and apical processes.

The North American species of this family have recently been reviewed by De Long (1942d) but he did not include any species from the West Indies. However, it does not appear to be necessary to offer any keys to or descriptions of the genera at this time. We do, however, include notes and illustrations on the common North and South American *Xerophloea viridis* which is widely distributed in Cuba. This species was formally included in the family *Gyponidae* but has been assigned by Evans (1947a) to the family *Ledridae*.

FAMILY GYPONIDAE

Prairiana Ball 1920a:90
Orthotype: *Gypona cinerea* Uhler

Prairiana albimaculata Osb.
Plate 2; Figs. 2A-E

(*Gypona albimaculata* Osborn 1926c:342 and 1926e:342)

There are a number of specimens in the present collection from various regions of Cuba which agree in essential details with Osborn's description of this species. Males, however, vary greatly in the depth and arrangement of color markings.

Color very variable. Dorsal surface generally light ochraceous buff, variously spotted and marked with tawny, ochraceous tawny, and white, These markings sometimes are pale and very scattered, sometimes chiefly fuscous or blackish fuscous and arranged in a large saddle beyond the apex of the mesonotum. Face chiefly blackish with a series of pale ochraceous bars on the lateral margins and a small or large ochraceous spot on the median line; anteclypeus chiefly light ochraceous buff; cheeks chiefly light ochraceous buff spotted with blackish; maxillary plates chiefly blackish with lateral margins usually broadly or narrowly bordered with light ochraceous buff. General color of the venter light ochraceous buff; anterior femora and tibia usually twice ringed with fuscous or blackish; posterior tibia with conspicuous black dots at the base of the spines.

Crown short and broad; anterior margins broadly curved; posterior margin almost parallel; slightly longer on the median line than at the lateral borders; ocelli large, about twice as far from each other as from the compound eyes; crown nearly flat with a decided slope; face flat;

postclypeus narrow, elongate, distinctly ribbed laterad; anteclypeus narrow; lora rather large; cheeks flat, lateral margins broadly curved; compound eyes large. Pronotum flat; anterior margin broadly curved; anterior lateral margins not very distinct; posterior lateral margins short; posterior margin fairly conspicuously projecting at the median line; mesonotum large. Venation regular, distinct.

Male genitalia with the last ventral segment about one and one-half times as long as the penultimate; posterior margin broadly but shallowly triangularly excavated on the median line; genital plates elongate, narrow at the base; inner margins curving toward the median line and then sinuate to the blunt apices; outer margins suddenly expanded on the basal third and then nearly straight to the obtuse apex; genital styles elongate, broad on the basal third with distinct rounded lobes near the apex, the apical two-thirds narrow, elongate, almost as long as the pygofer; aedeagus elongate slender; when viewed laterad suddenly elbowed on the base, broadly curved to the sagittate apex with two pairs of lateral processes, one at the base broad and flat, curved inward and meeting near the apex of the aedeagus, the other on the apical fifth, elongate, slender, sagittate at the apex. Female genitalia with the last ventral segment nearly three times as long as the penultimate; posterior margin broadly incised with a distinct broadly curved median lobe, lateral lobes scarcely produced; pygofer large, distinctly swollen with heavy spines on the apical half.

Length to apex of tegmina: 7.0-8.5 mm.

Specimens are at hand from Camaguey; 16 August 1924; J.A. Sierra Maestra; 10-22 July 1922; C.H.B. and C.S.B. 1070-1350 m. Mangas, Pinar del Rio; 6 June 1937; S.C.B. and L.C.S.; taken on *Palmcana*. Las Tunas; 16 July 1933; S.C.B.; on *Mahogany*. Pan de Matanzas Mts.; 12 June 1932; S.C.B., A.R.O. and L.C.S.; Arroyo Maranjo, Habana Province; L.C.S.; taken on Jaguey. Ct. Palma, Oriente; 11 June 1926; L.C.S. Ct. Augustine; 26 June 1936; L.C.S.

Prairiana acunai n. sp.

Plate 3; Figs. 1A-E

This species is somewhat anomalous in any known genus. In general characters it resembles most nearly *Hamana* DeLong but the tegmina differ decidedly and the genitalia differ in all details except the general structure of the genital styles. The crown is typically shorter than in *Prairiana* Ball but the tegmina and genitalia resemble the species of this genus more closely than any other genus.

Head broad, not quite as broad as the greatest width of the pronotum. Crown short and broad, more than twice as broad as the median length; ocelli about equi-distance from anterior and posterior border, about as far from each other as from the compound eyes; anterior margin slightly angulate, not very foliaceous; posterior margin broadly incised. Face flat; postclypeus narrow, distinctly indented dorsad; anteclypeus about twice as long as its greatest width; maxillary plates narrow and elongate. Genae

broad, flat, distinctly rugulose. Pronotum broad, distinctly rugulose; anterior margin broadly curved; posterior margin broadly incised; anterior lateral margins slightly longer than the posterior lateral margins, which are nearly straight. Tegmina with normal venation, distinctly rugulose. Scutellum large.

Male genitalia with the pygofer short and broad, distinctly produced dorsad; genital plates elongate, narrow, distinctly incised basad, then nearly parallel to the broadly rounded apices; genital styles broad at the base, then graduate attenuate to a somewhat club-like apical portion; aedeagus elongate, somewhat elbowed at the base with a pair of elongate apical processes; basal processes broad, slightly hood-like. Female genitalia with the last ventral segment more than twice as broad as long, its median length not quite twice the length of the penultimate segment; posterior margin broadly incised, lateral lobes distinctly produced and the median area produced into a distinct triangular or rounded lobe.

General color light olive; green; crown and pronotum more or less brownish green; with the tegmina heavily marked with broad dashes of the same color; venter chiefly brownish green with the anterior and intermediate tibiae and tarsi and the posterior tarsi tinged with bright red.

Length to apex of tegmina: 9.0-12.0 mm.

Holotype ♂: Moa, Oriente Province; 13-22 April 1945; J.A.

Allotype ♀: Moa, Oriente Province; 12-22 April 1945; J.A.

Paratypes 1 ♀: Moa, Oriente Province; 12-22 April 1945; J.A. 3 ♂♂ and 3 ♀♀: Moa, Oriente Province; 3-16 November 1945; J.A.

Prairiana bicolorata n. sp.

Plate 1: Figs. 1A-D

This is a medium small species with the head and pronotum ochraceous buff; mesonotum and tegmina tawny; and with conspicuous round black dots on the crown, pronotum and tegmina.

Crown broad and flat, about twice as broad as long; anterior margin broadly curved; posterior margin more shallowly incised; median length about half again as long as the lateral borders next to the compound eyes. Face broad and flat, deeply impressed beneath the dorsal margin; antennal pits deep. Postclypeus elongate, more than twice as long as broad, deeply impressed on the dorsal margin; anteclypeus narrow, about twice as long as broad. Maxillary plates elongate, narrow, strongly produced dorsad. Genae narrow, more than twice as long as their greatest width. Pronotum elongate, not twice as broad as the median length; whole surface finely rugulose; anterior margin broadly curved; anterior lateral margins more than twice as long as the posterior lateral margins; both margins nearly straight, strongly carinate; posterior margin nearly straight. Mesonotum broad, nearly as broad as the head. Tegmina elongate, narrow. Venation regular; surface somewhat rugulose.

Male genitalia with the pygofer elongate, triangular. When viewed laterad somewhat triangular in outline. Genital plates elongate, narrow, nearly as long as the pygofer. Inner margin nearly straight; outer margin broadly incised toward the apex; apical margins oblique. Genital styles elongate, narrow. Apex quadrately expanded with the angles of the apical

plate triangularly produced. Aedeagus tubular, shorter than the genital styles. Basal processes rather broad, about as long as the aedeagus; apices curved inward meeting on the median line; apical processes slender, elongate.

General color head and pronotum beneath ochraceous buff; compound eyes black. Crown with a pair of conspicuous dots on the posterior border about equidistant from the compound eyes and the median line. Pronotum irregularly spotted with small round brownish dots over the entire surface and a pair of conspicuous black dots near the lateral margins about equidistant from the anterior and posterior margins. Mesonotum chiefly tawny with irregular markings. Tegmina mostly tawny with irregular paler markings and four pairs of conspicuous black dots, two on the sutural margin, one on the basal third between media and cubitus, and one on the sub-apical cross-vein between media and radius. Numerous other darker brown markings which tend to blackish irregular distributed over the entire surface. Ventral surface chiefly ochraceous buff with a dorsal margin of the face tending to blackish fuscous. Lateral margins of the thorax chiefly blackish and the posterior tibia chiefly brownish.

Length to apex of tegmina: 7.8 mm.

Holotype ♂: Bahia Honda, Cuba; 7 December 1927; S.C.B.

Prairiana cubana Osb.
(Osborn 1926c:341)
Plate 1; Figs. 2A-E

This species is quite variable in color, varying from light ochraceous buff, sparsely spotted with brownish or blackish, to ochraceous tawny heavily spotted with fuscous and black. Head somewhat angulate; ocelli about as far from the median line as from the compound eyes; genitalia distinct.

Crown rather smooth; anterior margin foliaceous and slightly upturned; median line almost one and one-half times as long as the margin next to the eyes, somewhat angulate; posterior margin broadly and shallowly incised. Face distinctly impressed beneath the foliaceous dorsal margin; postclypeus elongate, more than twice as long as broad, lateral arcs distinct; anteclypeus elongate, about twice as long as its greatest width, somewhat widened toward the apex; maxillary plates elongate, nearly twice as long as broad; genae elongate, flat, indistinctly rugulose. Pronotum distinctly widened to the anterior lateral angles, not quite as broad as long; anterior margin broadly curved; anterior lateral margins not distinctly separated from the anterior margin; posterior margin nearly straight; whole surface finely rugulose. Mesonotum large. Tegmina elongate, narrow; apical margin acutely rounded; venation very distinct.

Female genitalia with last ventral segment slightly longer on the median line than the penultimate segment; lateral posterior angles strongly produced; posterior margin broadly incised with a broad, distinctly rounded median lobe. In the male, the pygofer is short and broad when viewed laterad, attenuate caudad with the apex curved inward and dorsad ending in an obtuse process; genital plates elongate, narrow, longer than pygofers, slightly widened on the basal third, then slightly narrowed to

the apices; genital styles elongate, narrow with the outer angle produced into a short triangular process; aedeagus elongate, narrow, distinctly curved ventrad at the base and then broadly curved dorsad; basal processes of the aedeagus are almost as long as the aedeagus, produced into a lobe-like ventral process and a shorter triangular process curved dorsad; apical processes are long, usually curved, sometimes nearly straight.

General color of the head and thorax varying from light ochraceous buff to ochraceous tawny; basic color of the tegmina usually ochraceous; whole dorsal surface more or less marked with tawny, fuscus or blackish; veins ochraceous orange or red, sharply contrasted to the ground. Sometimes there are one or two oblique bands across the tegmina, the basal one starting about the middle of the costa and continuing to the apex of the mesonotum; apical one starting at the ante-apical cell and ending at about the middle of the clavus. The markings on the crown and pronotum described by Osborn not distinct. The color of the face is chiefly ochraceous orange with a dorsal margin along the base distinctly reddish. Lateral arcs on the postclypeus usually distinctly fuscus or blackish. Venter of the abdomen somewhat infuscate.

Length to apex of tegmina: (quite variable) 7.5-10.5 mm.

This species was described originally from Jatibonico, and Holquin. There is in the present collection quite an extensive series of specimens from the following localities: Pico Turquino, 4,500 ft; 20 July 1922; S.C.B. and C.H.B. Moa, Oriente; 3-16 November 1945; J.A. Camagüey, 25 July 1923; J.A. Florida, Camagüey; 8 June 1922; J.A.

Prairiana major n. sp.

Plate 2; Figs. 1A-E

This species may be recognized from other species of the genus Prairiana by its large size and distinctive coloration.

Crown distinctly sloping; anterior margin very thin and foliacous; about twice as broad as its median length; median length distinctly longer than the lateral margins next to the compound eyes; anterior margin triangularly curving; posterior margin broadly incised; ocelli slightly behind the middle, slightly farther from each other than from the compound eyes; face elongate, triangularly impressed just beneath the anterior margin; postclypeus narrow, more than twice as long as broad; anteclypeus rather wide; antennal ledges distinct; antennal pits deep; compound eyes small. Pronotum about twice as long as the crown, nearly twice as broad as the median length; anterior lateral margins about twice as long as the posterior lateral margins, strongly carinate, curving into the broadly curved anterior margin; posterior margin nearly straight; the whole surface sloping flatly, and distinctly but finely rugulose. Mesonotum large, about as long as the pronotum. Tegmina somewhat narrowed apically; venation regular; surface very smooth, with impressions along the main veins basad.

Male genitalia with the pygofer short, nearly twice as long as their greatest width; genital plate elongate, longer than the pygofer, nearly three times as long as the greatest width, apex diagonally obtuse, inner margin nearly straight, outer margin curving laterad on the basal third;

genital styles elongate, narrow, nearly as long as the aedeagus; basal area but little broader than the apical region with a distinct circular lobe at the apex; apical region elongate, narrow, slightly reflexed laterad; aedeagus shorter than the genital plates, basal processes shorter than the aedeagus, apical processes slender. Female last ventral segment nearly twice as long on the median line as the penultimate; posterior lateral angles produced, rounded; median lobe broad, nearly as long as the lateral lobes, distinctly emarginate apically.

Color quite variable. Whole dorsal surface light ochraceous buff, heavily marked with russet brown over most of the dorsal surface; crown tinged with ochraceous orange and with numerous very minute dots, russet or blackish fuscous; anterior and lateral margins of the pronotum narrowly tinged with ochraceous orange with very numerous blackish dots, posterior area of the pronotum russet brown with two pairs of large blackish fuscous spots on the anterior margin; tegmina with the basal area with widely scattered, rather large fuscous or blackish dots, usually a very large blackish spot just below the claval suture on the basal third, apical two-third heavily and fairly regularly marked with russet; compound eyes and face chiefly blackish or fuscous; all of the femora heavily marked with blackish rings; tibiae tawny with the apices blackish; tarsi tawny more or less heavily marked with blackish; with distinct black dots at the base of the spines on hind tibia; abdomen chiefly tawny, heavily marked with black.

Length to apex of tegmina: 13.0-14.0 mm.

Holotype ♂: Sarahueca, Oriente Province; 14-18 July 1927; S.C.B.

Allotype ♀: Guamo, Oriente Province; December 1925; C.M.G.

Paratypes: 1 ♂ Pico Mocha to Pico Joaquin, Sierra Maestra Mts., 3900 to 5300 ft.; Oriente Province; 18 May 1948; J.A. 1 ♂ Pico Mocha to Pico Joaquin, Sierra Maestra Mts., 3900 to 5300 ft.; Oriente Province; 18 May 1948; F.V. and C.F. 1 ♀ Camaguay; J.A.

Acusana DeLong 1942d:57

Logotype: *Acusana veprecula* DeLong

Acusana nigromarginata n. sp.

Plate 3: Figs. 2A-E

This is a small greenish species fading to light ochraceous tawny without markings except the darker eyes and a narrow fascia on the anterior margin of the head which is blackish.

Head broad, nearly as broad as the pronotum; crown flat; anterior margin thin and foliaceous, broadly curved; posterior margin slightly curved; median length about one-half the width; ocelli about half again as far from each other as from the compound eyes; face flat; postclypeus narrow, distinctly widened dorsad, flat, slightly impressed on the dorsal margin with the anterior margin of the head distinctly produced and overhanging; antennal sockets rather deep; anteclypeus narrow, elongate, more than twice as long as the greatest width; maxillary plates nearly diamond-shaped, about twice as long as broad; genae rather flat. Pronotum broad and flat; anterior margin broadly curved; posterior margin shallowly in-

cised; anterior lateral margins nearly straight, not twice as long as the posterior lateral margins, distinctly carinate. Mesonotum broad and flat. Tegmina translucent. Venation regular but indistinct.

Male genitalia with the pygofer broad and short, not as long as the greatest width, with a few very stout spines on the posterior dorsal border; genital plates short and broad, less than twice as long as the greatest width; genital style short, blade-like; aedeagus short and broad at the base, triangularly produced with a pair of short apical spines; apical half of the aedeagus bent dorsad at nearly a right angle. Female genitalia with the last ventral segment nearly twice as long as the penultimate segment; the later posterior angles scarcely produced; posterior margin broadly curved with a short, broad, median lobe which is notched on the median line.

General color pale ochraceous tawny with a greenish tinge, much greener in life. Compound eyes fuscus. Narrow anterior margin of the head blackish.

Length to apex of tegmina: 6.5-7.0 mm.

Holotype ♂: St. Nicolas, Oriente; 20-21 July 1927; on *Coffea arabica* Linne; S.C.B.

Allotype ♀: St. Nicolas, Oriente; 20-21 July 1927; on *Coffea arabica* Linne; S.C.B.

Paratypes 2 ♂♂: St. Nicolas, Oriente; 20-21 July 1927; on *Coffea arabica* Linne; S.C.B.; 2♀♀: St. Nicolas, Oriente; 20-21 July 1927; on *Coffea arabica* Linne; S.C.B. 3 ♂♂: Cumbre, Pico Turquino, 22 July 1922; S.C.B. and C.H.B. 3♂♂: Jarahueca, 12-18 July 1927; on *Coffea arabica* Linne; S.C.B. 2 ♀♀: Jarahueca; 12-18 July 1927; on *Coffea arabica* Linne; S.C.B. 1 ♂: Pico Turquino; 10-29 June 1936; J.A. 1 ♀: Pico Turquino; 10-29 June 1936; J.A. 2 ♀♀: Sierra de Nipe; 19 October 1941; J.A. 1♂: Pico Joaquin to Turquino; 5300-6300 ft.; 19 May 1948; J. A. 1 ♀: Pico Joaquin to Turquino; 5300-6300 ft.; 19 May 1948; J.A.

Ponana Ball 1920a:93

Orthotype: *Gypona scarlatina* Fitch

Ponana fastosa n. sp.

Plate 4: Figs. 2A-C

This is the most beautifully colored species of Gyponidae in the present collection. Head, pronotum and mesonotum pale greenish, faintly tinged with orange; basal three-fourths of the tegmina bright mars yellow with the apical fourth heavily infuscated with red veins and the basal margin of the infuscated area black; costal margin faintly greenish.

Head narrower than the pronotum; crown slightly longer on the median line than next the compound eyes; ocelli slightly in front of the middle, about as far from each other as from the compound eyes; whole crown sloping decidedly cephalad; anterior margin broadly rounded to the face; face flat; antennal pits deep; postclypeus not very broad, about twice as long as its greatest width; anteclypeus narrow, about twice as long as broad, distinctly broader at the apex than at the base; maxillary plates small, about

twice as long as the greatest width; genae flat, not very broad. Pronotum twice as broad as long; anterior margin broadly curved; posterior margin shallowly excavated; anterior lateral margins nearly straight, about one and a half times as long as the posterior lateral margins. Mesonotum large, almost as broad as the head including the compound eyes. Tegmina elongate, narrow. Venation regular. Female genitalia with the last ventral segment about one and a half times as long as the penultimate on the median line. Posterior angles strongly produced; posterior margin broadly sinuate with a distinct median lobe which is broader than long.

Head, pronotum, and mesonotum pale yellowish green; compound eyes black; crown, pronotum and mesonotum especially the disc of the pronotum tinged with yellowish orange; basal three-fourths of the tegmina yellowish orange; costal margin yellowish green; apical fourth of the tegmina strongly infuscated with a distinct blackish fascia at the base of the infuscated area; the veins in the infuscated area bright red; beneath including the face and abdomen, chiefly pale greenish with the posterior tibiae chiefly fuscous and the female pygofers and ovipositor fuscous; dorsal area of the abdomen bright red; lateral margins pale greenish.

Length to apex of tegmina: 7.8 mm.

Holotype ♀ : Barrio Caobilla, Camagüey; 23-25 June 1927; J.A.

Gypona Germar 1821a:73

Haplotype: *Cercopis glauca* Fabricius

Gypona annulipes Spangb.

(Spangberg 1881a:35)

There is nothing in the present collection that we can identify as this species and since the type cannot be traced, we copy the original description below in the hope that it may call this to the attention of other workers who may be able to locate this species.

Sordide flavescens, subtus, facie excepta, pallidior, maculis parvis duabus verticis basalibus nigris, vertice, pronoto scutelloque sat dense ferrugineo-maculatis, facie fere tota fusca; ocellis inter se quam ab oculis fere duplo longius distantibus, paullo ante medium verticis positis; pedibus sordide flavescentibus, in testaceum vergentibus, late ferrugineo-annulatis; tegminibus punctis vel maculis parvis ferrugineis sat dense ornatis; alis pallide guscescentibus subhyalinis.

Mas segmento ventrali ultimo fere dimidio longiore quam penultimo, apice subtruncato.

Femina ignota.

♂ : long. corp. 6,5 mill., long. corp. c. tegm. 7 mill., lat. 3 mill.

Patria: Cuba.

Caput breve, margine antico rotundato, vertice subtiliter striato, medio et ad oculos aeque longo. Pronotum duplo et dimidio longius quam vertex, transversim strigosum, antica et lateralibus partibus fere laeviusculis, marginibus lateralibus anticis et posticis fere aeque longis.

Haec species ad divisionem N pertinet.

FAMILY LEDRIDAE

TRIBE LEDRINI

In this tribe the head is usually fairly large and more or less spatulate; crown usually flat; face elongate; postclypeus long and rather narrow; anteclypeus elongate, narrow; genae elongate, narrow; antennae usually short; compound eyes globose and the ocelli on the crown. Pronotum usually large, somewhat declivous cephalad. Mesonotum moderate in size; tegmina are frequently coriaceous. Venation more or less irregular, sometimes with numerous supernumerary veins and cross-veins. Hind tibiae usually have only a few stout spines on the outer margin, frequently with fine hair-like spines between the stout spines.

Most American writers have included the genus *Xerophloea* in the Family *Gyponidae* but Medler (1943a), DeLong and Knull (1946a) and Evans (1947a:131) have placed this genus in the Family *Ledridae*.

Xerophloea viridis Fabr.

Plate 4: Figs. 1A-E

This species is found from Massachusetts to Washington south through Mexico and the West Indies to Rio de Janeiro and Argentina. It is apparently common and wide spread in Cuba ranging from Oriente Province on the east to Havana and Zapata Peninsula on the west.

This species is somewhat variable as to color and general structure but the genitalia seem to be quite constant.

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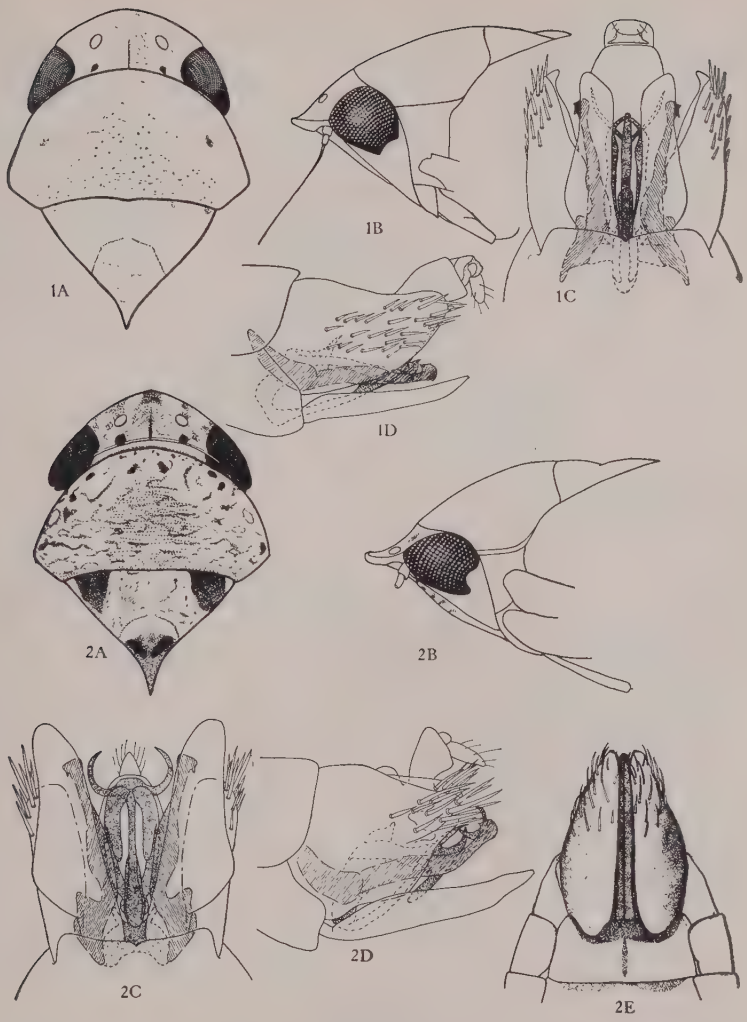

Plate 1

Fig. 1A. Prairiana bicolorata head-thorax
Fig. 1B. Prairiana bicolorata lateral head
Fig. 1C. Prairiana bicolorata ♂ genitalia ventral
Fig. 1D. Prairiana bicolorata ♂ genitalia lateral

Fig. 2A. Prairiana cubana head-thorax
Fig. 2B. Prairiana cubana lateral head
Fig. 2C. Prairiana cubana ♂ genitalia ventral
Fig. 2D. Prairiana cubana ♂ genitalia lateral
Fig. 2E. Prairiana cubana ♀ genitalia

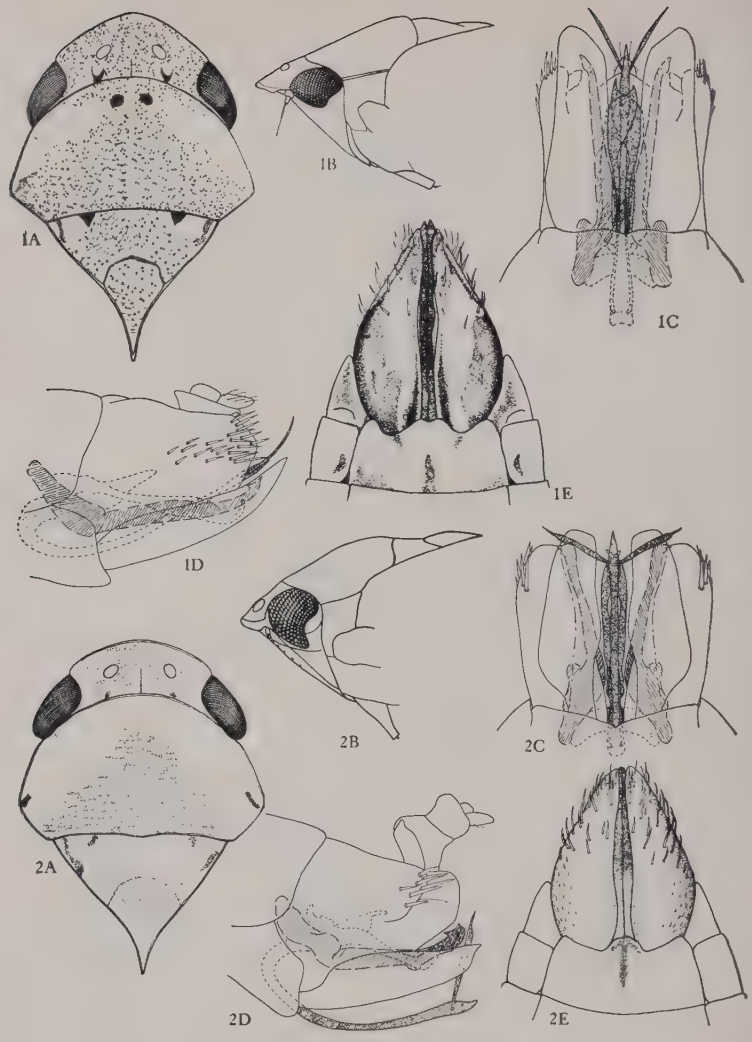

Plate 2

Fig. 1A. Prairiana major head-thorax
Fig. 1B. Prairiana major lateral head
Fig. 1C. Prairiana major ♂ genitalia ventral
Fig. 1D. Prairiana major ♂ genitalia lateral
Fig. 1E. Prairiana major ♀ genitalia

Fig. 2A. Prairiana albimaculata head-thorax
Fig. 2B. Prairiana albimaculata lateral head
Fig. 2C. Prairiana albimaculata ♂ genitalia ventral
Fig. 2D. Prairiana albimaculata ♂ genitalia lateral
Fig. 2E. Prairiana albimaculata ♀ genitalia

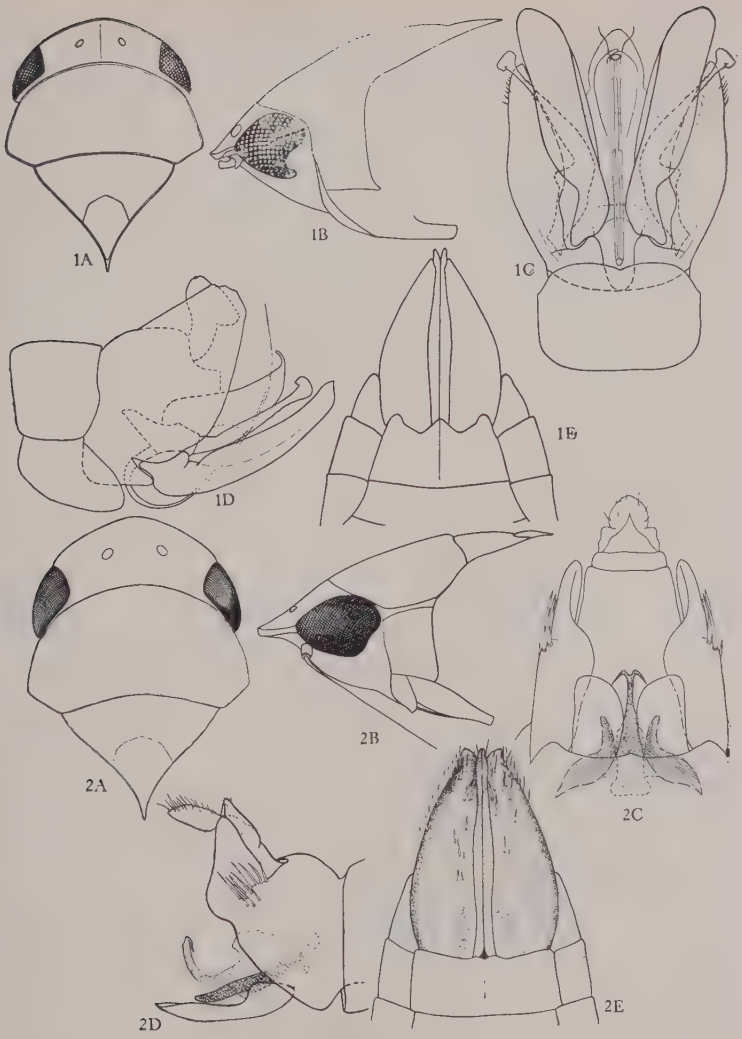

Plate 3

Fig. 1A. Prairiana acunai head-thorax
Fig. 1B. Prairiana acunai lateral head
Fig. 1C. Prairiana acunai ♂ genitalia ventral
Fig. 1D. Prairiana acunai ♂ genitalia lateral
Fig. 1E. Prairiana acunai ♀ genitalia

Fig. 2A. Acusana nigromarginata head-thorax
Fig. 2B. Acusana nigromarginata lateral head
Fig. 2C. Acusana nigromarginata ♂ genitalia ventral
Fig. 2D. Acusana nigromarginata ♂ genitalia lateral
Fig. 2E. Acusana nigromarginata ♀ genitalia

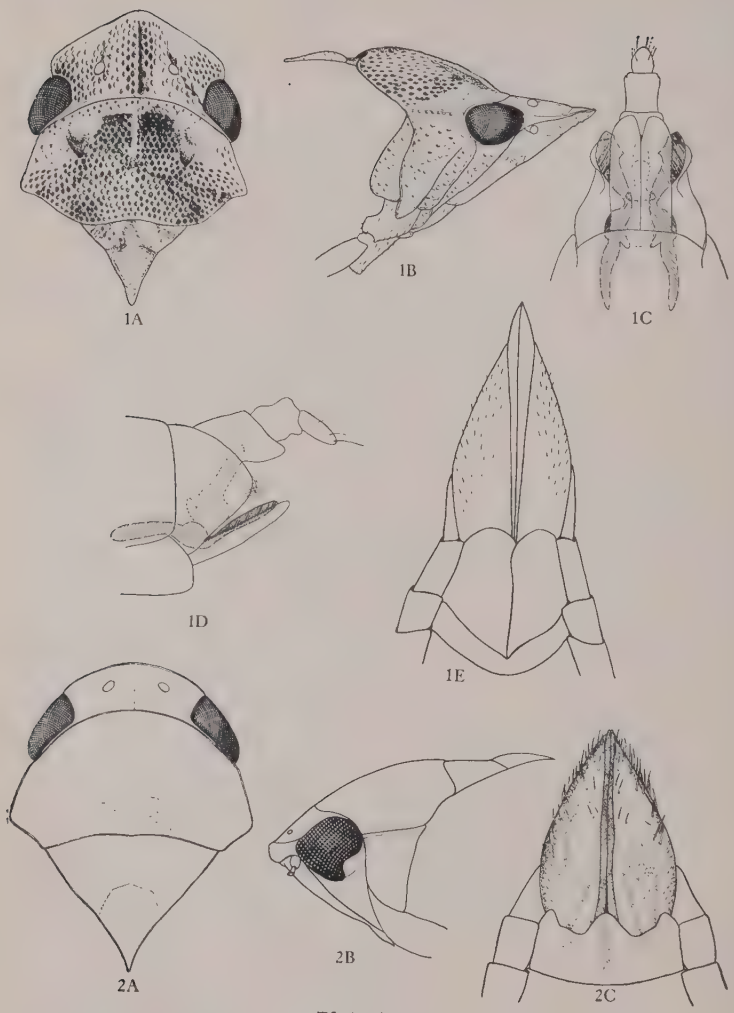

Plate 4

Fig. 1A. Xerophloea viridis head-thorax
Fig. 1B. Xerophloea viridis lateral head
Fig. 1C. Xerophloea viridis ♂ genitalia ventral
Fig. 1D. Xerophloea viridis ♂ genitalia lateral
Fig. 1E. Xerophloea viridis ♀ genitalia

Fig. 2A. Ponana fastosa head-thorax
Fig. 2B. Ponana fastosa lateral head
Fig. 2C. Ponana fastosa ♀ genitalia

A REPORT ON TWO MAYFLY GYNANDROMORPHS[1]

LEWIS BERNER

The anomalous condition of gynandromorphism has been noted in the insect order Ephemeroptera several times in the past. In view of its rarity among the mayflies, it was felt that the collection within a period of eight days of two individuals showing this characteristic was well worth reporting. A review of the literature indicates that the phenomenon of gynandromorphism is more strikingly developed in the two specimens herein discussed than in any other described North American forms, chiefly because of the remarkable enlargement of the male compound eye.

The literature concerning gynandromorphic individuals was summarized by Daggy (1944) in a paper describing two of his specimens in which the condition was seen. Until now, no anomalous individuals in either the genus *Heterocloeon* or *Pseudocloeon* have ever been reported. In Europe, a member of the same subfamily, *Baetis rhodani*, appears to be the commonest form showing gynandromorphism.

The gynandromorphic specimen of *Heterocloeon curiosum* was taken while it was in flight over the Cullasaja River at Turtle Pond Bridge, Macon County, North Carolina, on August 21, 1948. Numerous females of a species, thought at that time to be in the genus *Baetis*, were seen flying at a height of from four to ten feet above the surface of the stream. They flew over the swiftest part of the river, occasionally dropping down to the water. The flight was in bright sunlight and was usually in a straight line with intermittent dips being made by individuals in the swarm. In all, about fifty specimens were collected from 1:45-3:30 P.M. when the swarming apparently ceased. As the specimens were collected, I observed that one seemed to be a male, and yet no others of this sex were collected during the afternoon, even though a careful search of the area was made. Later examination of the specimens showed that the apparent male was no true representative of that sex, but a gynandromorph which was in flight with the females. Obviously the female characteristics or habits far overshadowed its male-like

[1] Contribution from the Department of Biology, University of Florida, and the Highlands Biological Laboratory, Highlands, N. C. This work was made possible by a generous grant from the Mary Cannon Howell Fellowship fund.

characters because, when it was caught, it was behaving as a female.

The following week, on May 28, while I was collecting adult mayflies about 5:00 P.M. as they flew over a small branch of the Whitewater River, Jackson County, North Carolina, the second gynandromorph was taken. Again, this was not immediately recognized as an anomaly and it was not until I returned to the laboratory at Highlands, that I became aware of my catch. This specimen proved to be in the genus *Pseudocloeon*. Fortunately, both males and females were taken along with the gynandromorph and so identification was possible. It belongs to a new species which I shall describe in a future report.

Since both males and females were taken at the same time as the second specimen, I cannot report as to whether it behaved as a male or as a female; however, at the time of collection, the individuals were not flying in swarms, but individually with the males rising and falling in the fashion typical of the group, sometimes rising to a height of at least fifteen feet and dropping to within inches of the water. The flight of the females was a straight forward advance with occasional dips. No mating was observed at that time.

DESCRIPTION OF THE GYNANDROMORPHIC SPECIMEN OF PSEUDOCLOEON SP. The right side of the head is typical of a true male with the greatly enlarged turbinate eye. Coloration of the right eye follows the usual pattern for males of this genus with the upper portion orange-red in color and the basal portion blackish gray. The distribution of pigmentation on the vertex of the right side of the head is obscured by the enlarged eye. The left side of the head bears an eye which does not differ in appearance from that of a normal female compound eye. Pigmentation on the left side of the head is similar to that of females. Figure 3 shows an oblique view of the head of the specimen.[2]

The meso- and metanotum are much more heavily pigmented on the left side of the mid-dorsal line than they are on the right. Figure 5 indi-

[2] The drawings for this paper were executed by Miss Esther Coogle, Staff Artist, Dept. of Biology, Univ. of Florida.

Figure 1. Dorsal view of a gynandromorph of *Heterocloeon curiosum* (McD.).

Figure 2. Dorsal view of the head of the gynandromorph shown in figure 1.

Fig 3. Oblique view of the head of a gynandromorph of *Pseudocloeon* sp.

Figure 4. Ventral view of the terminal abdominal segments of the *Pseudocloeon* gynandromorph.

Figure 5. Dorsal view of the *Pseudocloeon* gynandromorph.

FIG. 1

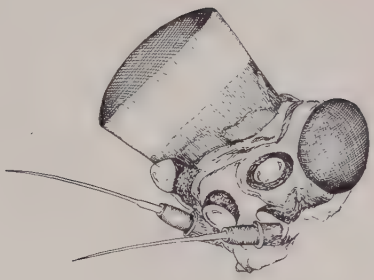

FIG. 3

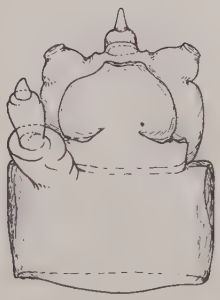

FIG. 4

FIG. 5

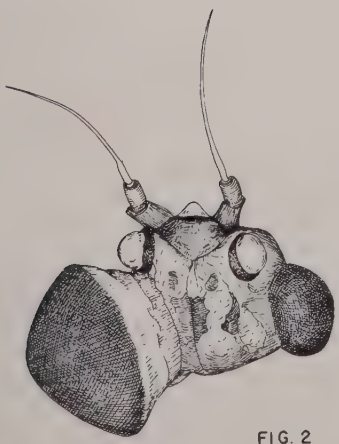

FIG. 2

cates the difference in intensity of coloration in this part of the insect. The prosternum is heavily pigmented with reddish brown, while the meso- and metasternum are pigmented laterally but in the median area, the sternites are white.

The left prothoracic leg is missing and the right appears to be similar to that of normal females taken at the same time as the gynandromorph. The meso- and metathoracic legs are not distinctive. The wings appear to be normal.

The abdomen has the typical male distribution of pigment dorsally, with tergite 1 heavily colored, tergite 2 considerably lighter, and tergites 3-5 white with brownish lateral markings. On the latter tergites, there is no indication of either the right or left sides being more heavily pigmented. Tergites 6-10 are rather dark and give the abdomen the common male color pattern consisting of a central white area (tergites 3-5) bounded anteriorly and posteriorly by darkly colored segments. It is more usual for tergite 6 to be white or light colored in normal males of other species of *Pseudocloeon*. Figure 5 illustrates the distribution of color in the dorsal part of the abdomen. Ventrally, the abdominal sternites are mostly white with some lateral reddish-brown coloring.

In most males of this genus, abdominal segments 2-6, being filled with air, appear semi-translucent, while in females which still retain their ova, the abdomen lacks the translucent appearance until the eggs are discharged. The gynandromorph, however, seems to have its abdomen partially filled with underdeveloped ovaries, and, although the central portion is white as in males, there is no evidence of any translucence.

One of the most interesting features of this specimen is the structure of the genitalia. The left gonapod has developed, but development is unusual in that the clasper is rudimentary. There is no evidence whatsoever of the development of the right clasper. The terminal abdominal segment is drawn in ventral view in figure 4.

DESCRIPTION OF THE GYNANDROMORPHIC SPECIMEN OF HETEROCLOEON CURIOSUM (McD.) The gynandromorph of *Heterocloeon curiosum,* with its male-like characteristics concentrated in the anterior part of the body, is considerably less masculine than is the specimen of *Pseudocloeon* described above.

The head is divided longitudinally into a male side on the left and female on the right. The turbinate male eye is not completely normal since it is not regularly oval in dorsal outline. It bulges upward and laterally giving it an irregular appearance. This is shown in figure 2. The color pattern on the dorsum of the head is somewhat obscured on the left side by the enlarged compound eye. A normally developed female eye is present on the right side of the head. The left dorsal side of the thorax has the dark brown coloration characteristic of males, while the right side is much more lightly colored and is approximately the same shade as that of a normal female taken in flight along with the gynandromorph (Figure 1). Ventrally, the thorax is rather uniformly dark colored. The forelegs on both sides of the specimen are normal and resemble those of typical females. The other legs are also normal. The forewings are normal but the hind wings are so minute as to be almost lost against the coloration

of the thorax. This is true of normal females as well, and is characteristic of the genus.

The remainder of the specimen seems to be identical with that of a normal female. Abdominal segments 1-6 appear, when viewed from the side, to be filled with air, and are semi-translucent; however, one ovum protrudes from the opening of each oviduct between the 7th and 8th segments. The removal of a small part of the lateral wall of the posterior part of the abdomen showed the presence of ova within that section. It is very likely that this specimen had mated as a female and then released most of its eggs before capture. There is no indication of the development of any male external genitalia. The caudal filaments resemble those of a normal female.

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NOTES ON THE FLORIDA BUPRESTIDAE (COLEOPTERA)[1]

REUBEN CAPELOUTO

Since the author undertook the study of the Buprestid fauna of Florida many new and interesting data have come to light. These data will be presented in this paper and it is hoped that the information will add to the knowledge of the Coleopterous fauna of Florida. At present eighty-one species, two varieties and two subspecies are recorded from Florida.

The author wishes to acknowledge the aid given him by Dr. F. N. Young, University of Florida; Dr. J. N. Knull, Ohio State University, and Mr. C. A. Frost, Framingham, Massachusetts.

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[1]Contribution from the Department of Entomology, University of Florida.

Specimens are in the collection of the Department of Entomology, University of Florida, except where otherwise noted.

Agriculus macer LeConte

This is a new record for Florida. A pair was taken in copulation, VIII-8-48, by Mr. Jon Herring, Department of Biology and Geology, University of Florida, at Payne's Prairie, 3 miles south of Gainesville, Alachua County. Though the host was not given by Mr. Herring, Fisher records it as hackberry and the Prairie abounds with the latter. Determination was made by Mr. C. A. Frost. The male is in the collection of Dr. F. N. Young.

Agrilus abductus Horn

This is a new record for Florida. One specimen, a female, was taken by Dr. Young, IV-10-48, in Marion County on *Quercus myrtifolia*. Determination was made by Mr. C. A. Frost. The specimen is in Dr. Young's collection.

Agrilus lecontei s.sp. *celticola* Fisher

This is a new record for Florida. There is a specimen in the collection of Mr. C. A. Frost labelled "Marianna, C17-55".

Agrilus cupricollis Gory

Two specimens collected by Dr. Young in the Ocala Scrub, Marion County, IV-10-48 on *Quercus myrtifolia*. Determinations were made by Mr. Frost.

Agrilus imbellis Crotch

Six specimens were collected by Dr. Young, IV-22-48, 2.7 miles north of Newberry, on *Leachea* sp. Four of the specimens are in the collection of Dr. Young. Determinations were made by Mr. Frost.

Agrilus dozieri Fisher

Four specimens were collected by Mr. Howard Weems, presently on the staff of the Department of Biology, University of Mississippi, Mr. Walter Thames, Entomologist, Everglades Experiment Station, Belle Glade, and the author. The specimen taken by Mr. Weems was on oak, 1 mile south of Gainesville, III-21-48. The remaining three specimens were taken by Mr. Thames and the author on the foliage of *Quercus niger* at

Sugarfoot Hammock, 4 miles west of Gainesville, III-20-48 and IV-5-48. Heretofore *Agrilus dozieri* Fisher has only been taken on hophorn bean (*Ostrya virginiana*). Specimens are in the collections of Mr. Weems, Dr. Young, Mr. Frost, and the Department of Entomology.

Eupristocerus cogitans (Weber)

This is a new record for Florida. Dr. Young collected a specimen in Walton County, V-2-48, about 5.6 miles east of Freeport, resting on the foliage of alder (*Alnus rugosa*). This specimen was determined by comparing it with specimens of northern *cogitans* that were sent the author by Mr. Frost. The specimen is in Dr. Young's collection.

Dicerca chrysea Melsheimer

This is a new record for Florida. Two specimens, both males, were collected by Dr. Young near Torreya State Park, Liberty County, resting on pine. In a communication from Mr. Frost who made the determinations, they were said to answer very well to *chrysea* except the apices of the elytra of the two specimens are more obliquely truncate than any in his series, though a few have indications of it. Mr. Frost expressed amazement that the species should occur so far south and asked if there has been some building going on in the locality where collected that called for white pine from the northeast. It is possible that they were introduced. White pine extends down into Georgia, and Professor L. A. Hetrick of the Department of Entomology, University of Florida, informs the author that there are white pines growing in Gainesville as ornamentals. The specimens are in Dr. Young's collection.

Buprestis nuttalli (Kirby)

This is a new record for Florida. The author collected a female ovipositing on a freshly cut log of *Pinus palustris*, IV-29-48, 2.5 miles west of Gainesville. Realizing the confusion between this species and *Buprestis consularis* Gory, the author sent the specimen to Dr. Knull who determined it to be *consularis* Gory. In a recent paper, Knull separates the two species on the basis of the male genitalia. There is another specimen in the collection of the Department of Entomology dated V-17-31, Seminole County, and a specimen in the collection of

Dr. Young, IV-10-46, Liberty County. These, in addition to the first mentioned specimen, key down to *nuttalli* (Kirby) in Helfer's key.

Buprestis aurulenta Linné

This is a new record for Florida. One specimen was found by the author in the undetermined collection of Coleoptera of Florida State University, Tallahassee. It was preserved in formaldehyde. This specimen was not labelled as to date or locality, but Dr. Esda Deviney, Head Professor of the Department of Biology, told the author that all of the specimens preserved in formaldehyde were collected by her students in Leon County at one time or another, and the author has labelled it as such.

Buprestis maculipennis Gory

A female was captured by the author, VIII-13-48, in Gainesville, ovipositing on painted pine lumber.

Buprestis lineata Fabricius

Two specimens examined by the author have such peculiar elytral maculations that they should be mentioned. One of the specimens has 22 small red spots scattered over the elytra, bearing not even the remotest resemblance to vittae. The other specimen has a large, irregular, brick-red spot in the center of each elytron, with an apical spot on the right elytron. There is also an apical spot on the left elytron but it is connected to the large median spot by a thin line.

Melanophila notata (Castelnau and Gory)

A specimen from a series of *M. notata* (C. & G.) collected by Mr. Howard Weems, at light, V-16-47, in Gainesville, has only one round yellow spot on the basal third of each elytron. This unusual specimen was sent to Mr. W. S. Fisher, then of the Division of Insect Identification, for comment. In a communication to the author, Mr. Fisher wrote, "Your specimen is the only one I have seen with only a single round yellow spot on each elytron." This specimen is in the collection of the Department of Entomology, University of Florida. Another specimen in the collection conforms perfectly to the elytral maculation of Horn's variety.

Melanophila obtusa Horn

This is a new record for Florida. One specimen was reared from a twig of *Pinus* sp., V-48, Alachua Air Base, Alachua County. Dr. Knull informed the author that there are two specimens in his collection from Orlando and Sanford.

Actenodes simi Fisher

This is a new record for Florida. This record is in the collection of Dr. J. N. Knull and was collected by Dr. and Mrs. Knull in Dade County, V-11-32.

Actenodes auronotata (Castelnau and Gory)

There is a specimen in the Florida State Plant Board collection that was taken on Australian pine (*Causarina equistifolia*), Hialeah, VI-30-48.

Acmaeodera tubulus (Fabricius)

Ten specimens were collected by Dr. F. N. Young at the Torreya Ravines, Liberty County, IV-30-46, feeding on *Ruellia* sp. Five specimens are in the collection of Dr. Young.

Acmaeodera pulchella (Herbst)

Three specimens in the Florida State Plant Board collection were examined by the author and the following hosts and localities noted: Spanish needle (*Yucca* sp.), Gotha, V-19-42; Winter Haven, V-10-48 — *Eriocaulon* sp. Dr. Phillips, VI-30-48.

Pachyschelus schwarzi Kerremans

A large series of this small Buprestid was collected on the leaves of *Psorolea* sp. in many Central Florida localities. One specimen was collected by Mr. W. G. Genung in Quincy, on blackberry.

Brachys fasciferus Schwarz

A male was collected at Archer, IV-3-48, by sweeping *Rubus trivialis*.

Anthaxia quercata (Fabricius)

One specimen, a female, was collected by Dr. Young 2.7 miles north of Newberry on runner oak. This specimen is extremely aberrent in its coloration having the prothorax and elytra brown,

with a violaceous tinge when placed under a light, and is strongly shining. The front of the head is brightly purplish-red, flecked with golden spots, becoming dull toward the occiput, and having a large golden spot below each eye. These spots are separated by a median depression, and the margins of the head and pronotum are faintly green. The ventral surface is less shining and dark brown. The specimen is in the collection of Dr. Young.

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AN ANNOTATED BIBLIOGRAPHY OF NORTH AMERICAN THYSANOPTERISTS: PART III

By STANLEY F. BAILEY
University of California, Davis, California

This part of the bibliography covers only the works of Dudley Moulton, one of the outstanding authorities on the Thysanoptera. Twenty years ago Mr. Moulton and Dr. Stanley B. Freeborn suggested that the writer take up the study of thrips and have continued to offer encouragement. Mr. Moulton has generously made his collection available for study and has offered many helpful suggestions throughout this period. The world-wide collection of thrips, composed of about 25,000 slides, which Mr. Moulton has assembled during the past forty-five years is deposited at the California Academy of Sciences, Golden Gate Park, San Francisco.

The following list of species described totals 47 new genera and subgenera, and 480 new species and varieties.

In addition to the systematic work on thrips, Mr. Moulton worked out the life history and early control measures for the pear thrips. His publications on species of economic importance are listed separately.

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1931b.—Jan.—A new *Aelothrips* from Nevada with notes on three other species found in California. Pan-Pacific Ent. 7 (3): 122-123. (Mailed Apr. 7, 1931.)

1931c.—Apr.—*Dendrothrips ornatus* Jablonowski, 1894. Bul. Brook. Ent. Soc. 26 (2): 75. (Mailed July 10, 1931.)

1931d.—Apr.—An interesting new California thrips. Pan-Pacific Ent. 7 (4): 173-174. (Mailed June 2, 1931.)

1932a.—Nov. 20.—and Steinweden, J. B. New Marquesan Thysanoptera. Pac. Ent. Sur. Publ. I, Art. 17, pp. 165-168. Bishop Mus. Bul. 98, fig. 44, a-e.

1932b.—Dec.—The Thysanoptera of South America. (I). Revis. de Ent., 2 (4): 451-484, figs. 1-3. (Date of publication Dec. 28, 1932.)

1933a.—Jan. 12.—and Steinweden, J. B. Thysanoptera from the Society Islands. Pac. Ent. Sur. Pub. 6, Art. 6, pp. 29-33. Bishop Mus. Bul. 113, figs. 1, a-d; 2, a-c.

1933b.—March.—The Thysanoptera of South America. (II). Revis. de Ent. 3 (1): 96-133, figs. 1-17. (Date of publication March 22, 1933.)

1933c.—July.—The Thysanoptera of South America. (III). Revis. de Ent. 3 (2): 227-262, fig. 18. (Date of publication July 20, 1933.)

1933d.—July.—*Oligothrips oreios* a new genus and species of thrips belonging to the family Opadothripidae Bagnall. Pan-Pacific Ent. 9 (3): 139-140. (Mailed Sept. 8, 1933.)

1933e.—Sept. 15.—and Steinweden, J. B. Two new species of *Cryptothrips* (Thysanoptera) from the Marquesas. Pac. Ent. Sur. Publ. 7, Art. 11, pp. 163-165. Bishop Mus. Bul. 114, fig. 1, a-f.

1933f.—Sept.—The Thysanoptera of South America. (IV). Revis. de Ent. 3 (3): 385-419, figs. 19-22. (Date of publication Sept. 25, 1933.)

1933g.—Oct. 24.—New Thysanoptera from India. Ind. For. Rec. (Ent. Ser.) 19 (1): 1-6.

1933h.—Dec.—The Thysanoptera of South America. (conclusion). Revis. de Ent. 3 (4): 447-458. (Date of publication Dec. 13, 1933.)

1934.—July.—New Thysanoptera of the Hawaiian Islands. Proc. Haw. Ent. Soc. 8 (3): 499-503.

1935a.—July 31.—and Newman, L. J. Thrips census. New species of thrips from Southwestern Australia. Jour. Roy. Soc. West. Australia. 21: 93-100.

1935b.—Oct.—New California Thysanoptera. Pan-Pacific Ent. 11 (4): 170-174. (Mailed Jan. 10, 1936.)

1935c.—Dec.—Two new species of Thysanoptera in Argentina and records of other species. Ann. Soc. Cien. Argentina. 120 (6): 254-257.

1935d.—A new thrips on cotton. Philip. Jour. Agr., Dept. Agr. & Comm., Manila. 6 (4): 475-477.

1936a.—Apr.—New American Thysanoptera. Bul. Brook. Ent. Soc. 31 (2): 61-65. (Mailed Apr. 16, 1936.)

1936b.—Apr.—Thysanoptera of the Hawaiian Islands. Proc. Haw. Ent. Soc. 9 (2): 181-188.

1936c.—May.—Thysanoptera from Africa. Ann. and Mag. Nat. Hist. (Ser. 10) 17: 493-509.

1936d.—July.—New Thysanoptera belonging to the genus *Thripps* Linn. Pan-Pacific Ent. 12 (3): 104-110. (Mailed Sept. 1, 1936.)

1936e.—and Andre, F. Four new Thysanoptera, with a preliminary list of the species occurring in Iowa. Iowa State Coll. Jour. Sc. 10 (3): 223-234.

1936f.—Thysanoptera of the Philippine Islands. Philip. Jour. Agr., Dept. Agric. and Comm., Manila. 7 (2): 263-273.

1937a.—Feb.—A new *Liothrips* from Japan. Kontyu 2: 113-114.

1937b.—Sept.—Further notes on Hawaiian thrips with descriptions of new species. Proc. Haw. Ent. Soc. 9 (3): 409-414.

1938.—Dec.—Thysanoptera from Minas Geraes, Brazil. Revis. de Ent. 9 (3-4): 374-382. (Date of publication Dec. 31, 1938.)

1939.—Aug. 15.—Thysanoptera collected by the Mangarevan expedition. Occ. Papers Bishop Mus. 15 (12): 141-148.

1940.—May 25.—Thysanoptera from New Guinea and New Britain. Occ. Papers Bishop Mus. 15 (24): 243-270.

1941.—July.—Thysanoptera from Minas Geraes, Brazil (second paper). Revis. de Ent. 12 (1-2): 314-322. (Date of publication July 31, 1941.)

1942a.—Jan.-Apr.—Seven new genera of Thysanoptera from Australia and New Zealand. Bul. So. Calif. Acad. Sc. 41 (1): 1-13, Pl. 1-7.

1942b.—June 1.—Thrips of Guam. Bishop Mus. Bul. 172: 7-16.

1944.—March 23.—Thysanoptera of Fiji. Occ. Papers, Bishop Mus. Bul. 17 (22): 267-311, fig. 1-10.

1946a.—Apr.—New species of thrips from Haiti and Turkestan. Pan-Pacific Ent. 22 (2): 56-58. (Mailed June 12, 1946.)

1946b.—Apr.—Two new species of thrips from North America. Pan-Pacific Ent. 22 (2): 59-60. (Mailed June 12, 1946.)

1947a.—Aug. 15.—New Thysanoptera from Mexico. Ann. Escuela Nac. Ciencias Biol. 4 (4): 419-421.

1947b.—Oct.—Thysanoptera from New Guinea, the Philippine Islands and the Malay Peninsula. Pan-Pacific Ent. 23 (4): 172-180. (Mailed Dec. 30, 1947.)

1948.—June.—The genus *Frankliniella* Karny, with keys for the deter-

mination of species (Thysanoptera). Revis. de Ent. 19 (1-2): 55-114, figs. 1-43. (Date of publication June 1, 1948.)

Other articles written by Mr. Moulton on thrips not of a systematic nature are as follow:

1905.—The pear thrips (*Euthrips pyri*). Calif. St. Hort. Comm., 17 pp., figs. 1-8.

1907.—The pear thrips. U.S.D.A., Bur. Ent., Bul. 68, part 1, pp. 1-16, Pls. I, II and figs. 1-8. June 10.

1909.—The orange thrips. U.S.D.A., Bur. Ent., Tech. Ser., No. 12, Part 7, pp. 119-122, Pl. VIII, figs. 1-4. Feb. 11.

1909.—The pear thrips and its control. U.S.D.A., Bur. Ent., Bul. 80, Part 4, pp. 51-66, Pls. IV-VI and figs. 13-17. Sept. 1.

1909.—The pear thrips. U.S.D.A., Bur. Ent., Bul. 68, Part 1 (revised), pp. 1-16, Pls. I, II and figs. 1-8. Sept. 20.

1928.—The greenhouse thrips. Mo. Bul. Calif. Dept. Agri., State of Calif. 17 (6): 366-367, fig. 59. June.

1928.—The grape thrips. Mo. Bul., Calif. Dept. of Agr., State of Calif. 17 (8): 455-57. Aug.

1931.—Western Thysanoptera of economic importance. Jour. Econ. Ent. 24 (5): 1031-36. Oct.

1939.—*Rhipidothrips brunneus* Williams. Pan-Pacific Ent. 15 (1): 20. Jan.

LIST OF TEREBRANTIA Described by Dudley Moulton

Aeolothrips africanus, 1936c. So. Afr.
aureus, 1931b. No. Amer.
brevicornis Bagn. var. *fuscus*, 1936c. So. Afr.
duvali, 1927c. No. Amer.
hartleyi, 1927c. No. Amer.
kuwanaii, 1907. No. Amer.
kuwanaii, var. *robustus*, 1907. No. Amer. = *Kuwanaii*. New synonymy. Types examined by writer.
nitidus, 1946b. No. Amer.
scabiosatibiae, 1930a. So. Afr.
tuolumneri, 1927c. No. Amer. = *nasturtii* Jones, 1912. About fifteen years ago Moulton called my attention to this synonymy. Bailey, 1935. Type examined by writer.
yosemitae, 1929a. No. Amer.

Anaphothrips africanus, 1936c. So. Afr.
(Chaetanaphothrips) aureus, 1936f. Philippine Is.
bicolor, 1926b. No. Amer. = *Odontanaphothrips enceliae*, 1926b. Lapsus calami.
crassicornis, 1929f. No. Amer.
cuthbertsoni, 1930a. So. Afr.
(Odontanaphothrips) enceliae, 1926b. No. Amer. Probably a synonym of *tricolor:* Hood, 1933c. The writer has compared the types of *enceliae* and *tricolor* and finds the difference to be in color only.

(Chaetanaphothrips) fasciatus, 1940. New Guinea.
minutus, 1929a. No. Amer.
(Anaphothrips) newmani, 1935a. Australia.
(Neophysopus) piercei, 1936f. Philippine Is.
priesneri, 1926a. No. Amer. = *Psilothrips*. Bailey, 1935.
sacchari, 1936f. Philippine Is.
(Anaphothrips) swezeyi, 1928b. Hawaiian Is.
tricolor, 1911. No. Amer. Moulton, 1926b. (See *Odontanaphothrips*).
(Anaphothrips) varii, 1935a. Australia.
zeae, 1911. No. Amer. = *longipennis* D. L. Cwfd. 1910. Bailey 1944. Types examined by writer.

Ankothrips aequalis, 1926b. No. Amer.
gracilis, 1926b. No. Amer.
vandykei, 1928e. No. Amer.
yuccae, 1926a. No. Amer.

Audiothrips, 1930a. Genotype: *Audiothrips perplexus*, by original designation.
monilis, 1936c. So. Afr.
perplexus, 1930a. So. Afr.

Bolacidothrips orizae, 1942b. Guam.

Bussothrips, 1935d. Genotype: *Bussothrips claratibia*, by monotypy. = *Ayyaria*. Priesner, 1938. Treubia 16 (4): 507.

Bussothrips claratibia, 1935d. Philippine Is. = *Ayyaria*. Ibid.

Chirothrips fulvus, 1936b. Hawaiian Is.
sacchari, 1936b. Hawaiian Is.
secalis, 1935b. No. Amer.
spinosus, 1946a. Haiti.
takahashii, 1928f. Japan.

Corynothrips flavus, 1941. So. Amer.

Ctenothrips frosti, 1929f. No. Amer.

Dactuliothrips Moulton, 1931d. Genotype: *Dactuliothrips spinosus*, by monotypy.

Dactuliothrips spinosus, 1931d. No. Amer.

Dinurothrips guamensis, 1942b. Guam.

Echinothrips Moulton, 1911. Genotype: *Echinothrips mexicanus*, by monotypy.

Echinothrips mexicanus, 1911. No. Amer. (Mexico).

Enneothripiella Moulton, 1941. Genotype: *Enneothrips (Enneothripiella) flavens*, by monotypy.

Enneothripiella flavens, 1941. So. Amer.

Erythrothrips Moulton, 1911. Genotype: *Erythrothrips arizonae*, by monotypy. Bailey, 1947.

Erythrothrips arizonae, 1911. No. Amer.
bishoppi, 1929f. No. Amer.
fasciculatus, 1929f. No. Amer.
keeni, 1929f. No. Amer.

Eurythrips flavacinctus M. and A. 1936e. No. Amer.

Euthrips albus, 1911. No. Amer. = *Taeniothrips*. Hood, 1914d. Steinweden, 1933c.
citri, 1909. No. Amer. = *Scirtothrips*. Hood, 1914d.
ehrhornii, 1907. No. Amer. = *Taeniothrips (Physothrips)*. Hood, 1915a. Steinweden, 1933c.
helianthi, 1911. No. Amer. = *Frankliniella*. Hood, 1914d. Moulton, 1935b, 1948.
minutus, 1907. No. Amer. = *Frankliniella*. Hood, 1914d.
orchidii, 1907. No. Amer. = *Anaphothrips (Chaetanaphothrips)*. Priesner, 1926. Thys. Europas, pp. 204-205.
parvus, 1911. No. Amer. = *Scirtothrips longipennis* (Bagn), 1909. Hood, 1914d.
tritici californicus, 1911. No. Amer. = *Frankliniella moultoni* Hood. Hood, 1914d. See also *F. californica* Moulton. Moulton, 1929a, 1948.
ulicis californicus, 1907. No. Amer. = *Odontothrips loti* Hal. Hood, 1914d. Moulton, 1927b, 1929f. Type examined by writer.

Exophthalmothrips Moulton, 1933b. Genotype: *Exophthalmonthrips longipennis*, by original designation.

Exophthalmothrips longipennis, 1933b. So. Amer.

Frankliniella abnormis, 1948. No. Amer.
alba, 1948. No. Amer. (Mexico).
andrei, 1936a. No. Amer.

Frankliniella andropogoni M. and A., 1936e. No. Amer. = *unicolor* Morgan. Moulton, 1948.
argentinae, 1935c. So. Amer.
aurea, 1948. No. Amer. (Mexico).
bicolor, 1948. So. Amer.
breviseta, 1948. Cuba (intercepted at New York).
caseariae, 1933b. So. Amer.
cephalica D. L. Cwfd., var. *echinodora*, 1948. Porto Rico.
cestrum, 1926c. So. Amer.
citri, 1935b. No. Amer.
clitoriae, 1940. New Guinea.
conspicua, 1935b. No. Amer.
dahliae, 1948. No. Amer.
dianthi, 1948. No. Amer. (Mexico).
flavens, 1928b. Hawaiian Is.
formosae, 1928f. Japan, Formosa.
formosae f. tricolor, 1928f. Japan.
frumenti, 1948. So. Amer.
fulvicornis, 1933b. So. Amer.
fulvipennis, 1933b. So. Amer.
fulvus, 1936a. No. Amer. = *tritici* var. *varicornis* Bagn. Moulton, 1948.
fuscipennis, 1948. No. Amer. (Mexico, Guatemala).
gardeniae, 1948. No. Amer. (Mexico).
grandis, 1936a. No. Amer.
inopinata, 1948. No. Amer. (Mexico).

inornata, 1936a. Cuba.
insignis, 1935b. No. Amer.
ipomoeae, 1948. Haiti.
lactea, 1948. Trinidad.
longispinosa, 1933b. So. Amer.
minuta f. columbiana, 1948. So. Amer.
minuta f. luminosa, 1948. No. Amer. (Mexico).
obscura, 1935b. No. Amer.
paucispinosa, 1933b. So. Amer.
pembertoni, 1940. New Guinea.
rodeos, 1933b. So. Amer.
rodeos, f. allochroos, 1933b. So. Amer. = *allochroos*, Moulton, 1948.
salicis, 1948. Formosa.
salviae, 1948. No. Amer.
schultzei Tryb., var. *nigra*, 1948. Australia.
serrata, 1933b. So. Amer.
speciosa, 1933b. So. Amer.
spinosa, 1936a. No. Amer. (Mexico). = *williamsi* Hood. Moulton, 1948.
stylosa Hood, var. *colombiensis*, 1948. So. Amer.
syringae, 1948. No. Amer. (Mexico).
tuberosi, 1933b. So. Amer.
umbrosa, 1948. No. Amer.
varipes, 1933b. So. Amer.
varitibia, 1948. No. Amer.
venusta, 1935b. No. Amer.
watsoni, 1948. No. Amer.
yuccae, 1935b. No. Amer.

Franklinothrips aureus, 1936c. So. Afr.

Graphidothrips Moulton, 1930d. Genotype: *Graphidothrips stuardoi*, by monotypy.

Graphidothrips stuardoi, 1930d. So. Amer.

Heliothrips bishoppi, 1929f. No. Amer. = *Hercothrips marginipennis* (Hood). Hood, 1940c.
bromi, 1927b. No. Amer. = *Hercothrips*. Bailey, 1935.
gossypii, 1927b. No. Amer. = *Hercothrips phaseoli* (Hood). Hood, 1940c.
pullus, 1936c. So. Afr.

Hercothrips ipomoeae, 1932b. So. Amer. = *braziliensis* (Morgan). Hood, 1940c.

Heterothrips brasiliensis, 1932b. So. Amer.
condei, 1932b. So. Amer.
flavitibia, 1932b. So. Amer.
gillettei, 1929f. No. Amer.
moreirai, 1932b. So. Amer.
nudus, 1932b. So. Amer.
spinosus, 1932b. So. Amer.
striatus, 1932b. So. Amer.
varitibia, 1932b. So. Amer.

Isochaetothrips Moulton, 1928c. Genotype: *Physothrips seticollis* Bagn., 1915, by original designation.

Isochaetothrips davidsoni, 1936a. No. Amer.
querci, 1928f. Formosa.
scotti, 1928c. Africa (Abyssinia).
unicolor, 1933b. So. Amer.
varicornis, 1933b. So. Amer.

Isoneurothrips antennatus, 1928b. Hawaiian Is.
brevicornis M. and S., 1932a. Marquesas Is.
carteri, 1927b. Hawaiian Is.
dubautiae, 1928b. Hawaiian Is.
fasciatus, 1937b. Hawaiian Is.
fullawayi, 1928b. Hawaiian Is.
pallipes, 1928d. Formosa = *taiwanus* Takahashi, 1936. Philip. Jour. Jour. Sc. 60(4):440 (nec *Thrips pallipes* Bagn., 1926).
rapaensis, 1939. Rapa Is. (So. E. Polynesia).
rosaceae, 1936f. Philippine Is.
setipennis, 1928d. Formosa.
williamsi, 1928. Hawaiian Is.

Kurtomathrips Moulton, 1927c. Genotype = *Kurtomathrips morrilli*, by original designation.

Kurtomathrips morrilli, 1927c. No. Amer.

Lamprothrips Moulton, 1935a. Genotype: *Lamprothrips maculosus*, by original designation.

Lamprothrips maculosus, 1935a. Australia.

Limphysothrips aureus, 1936c. So. Afr.

Merothrips hawaiiensis, 1937b. Hawaiian Is.

Monilothrips Moulton, 1929d. Genotype: *Monilothrips kempsi*, by monotypy.

Monilothrips kempi, 1929d. India.

Monothrips Moulton, 1940. Genotype: *Monothrips flavus*, by orginal designation.

Monothrips flavus, 1940. New Britian.

Mycterothrips claripennis, 1933c. So. Amer. (*Mycertothrips*, lapsus calami) *flavens*, 1930a. Afr. (Gold coast).

Octothrips Moulton. 1940. Genotype: *Octothrips suspensus*, by original designation.

Octothrips suspensus, 1940. New Guinea.

Odontanaphothrips Moulton, 1926b. Genotype: *Anaphothrips (Odontanaphothrips) tricolor* Moulton, 1911, by original designation, 1926.

Odontothrips californicus (Moulton) 1907. New name for *Euthrips ulicis californicus*. Moulton, 1927b, 1929b. = *loti* Hal. (See *Euthrips*).

Oligothrips Moulton, 1933d. Genotype: *Oligothrips oreios*, by monotypy.

Oligothrips oreios, 1933d. No. Amer.

Orothrips Moulton, 1907. Genotype: *Orothrips kelloggii*, by monotypy.

Orothrips keeni, 1927c. No. Amer.
kelloggii, 1907. No. Amer.
kelloggii yosemitii, 1911. No. Amer. = *yosemitii*. Moulton, 1927c.
raoi, 1927c. India.
variabilis, 1927c. No. Amer. = *Yosemetii*. Bailey, 1949b.

Projectothrips Moulton, 1929d. Genotype: *Projectothrips pruthi*, by monotypy.
pruthi, 1929d. India.

Prosopoanaphothrips Moulton, 1926b. Genotype: *Anaphothrips (Prosopoanaphothrips) reticulatus* (Moulton), 1907 (from *Sericothrips*), by original designation.

Pseudanaphothrips turneri, 1936c. So. Afr.

Rhopalandrothrips corni, 1927b. No. Amer.

Rhiphidothrips aureus, 1935a. Australia.
turneri, 1930a. So. Afr. = *Rhipidothripiella*. Bagnall, 1932. Ann. Mag. Nat. Hist. 10(57):292-93.

Scirtothrips acaciae, 1930a. Afr. (Gold Coast).
aceri, 1926a. No. Amer.
antennatus, 1937b. Hawaiian Is.
bondari, 1933b. So. Amer.
clarus, 1942b. Guam.
dobroskyi, 1936f. Philippine Is.
pomeroyi, 1930a. (Gold Coast).

Sericothrips dentatus S. and M., 1930c. China.
fasciatus, 1938. So. Amer.
flavens, 1941. So. Amer.
langei, 1929f. No. Amer.
luculentus, 1938. So. Amer.
portoricensis var. *extremus*, 1941. So. Amer.
reticulatus, 1907. No. Amer. = *Anaphothrips (Prosopoanaphothrips)* Moulton, 1926b.
stanfordi, 1907. No. Amer = *Anaphothrips. (Anaphothrips)* Moulton, 1926b. Moulton has a notation in his collection that *stanfordi* = *secticornis* Trybom. Such appears true but the writer has seen only one authentically determined slide from Europe. Priesner questions this synonymy.
varius, 1941. So. Amer.

Stulothrips Moulton, 1934. Genotype: *Stulothrips trespinus*, by monotypy. = *Docidothrips* Pr. Bianchi, 1945. Proc. Haw. Ent. Soc. 12(2):283.

Stulothrips trespinus, 1934. Hawaiian Is. = *Docidothrips*. Ibid.

Taeniothrips abyssiniae, 1928c. Afr. (Abyssinia).
albipennis, 1929a. No. Amer.
allia, 1936f. Philippine Is.
aureus, 1946b. No. Amer. Probably a synonym of *T. orionis* Treherne.
canavaliae, 1928f. Fromosa = *vitticornis* Karny. Priesner, 1938. Treubia 16(4):524-525.
carteri, 1936f. Hawaiian Is.

clarus, 1928d. Formosa.
crassicornis, 1930a. Afr. (Gold coast).
eribotryae, 1928f. Japan.
euophthalmos, 1940. New Guinea.
(Lefroyothrips.) fasciatus, 1940. New Guinea.
formosae, 1928f. Formosa.
gladioli M. and S., 1931a. No. Amer. = *simplex* Morison, 1930. Steele, 1935. C.S.I.R. Pam. 54, pp. 33-36. Australia.
gracilis, 1928d. Formosa, Japan.
incerta, 1936c. So. Afr.
kotoshoi, 1928f. Formosa.
lagoenacollus, 1933b. So. Amer.
leptospteron, 1940. New Guinea.
meridiana, 1936c. So. Afr.
meridiana f. tenuis, 1936c. So. Afr.
mucunae Pr., var. *fijiensis*, 1944. Fiji.
pearsalli, 1927c. No. Amer. = *Frankliniella achaeta* Hood. Moulton, 1948.
pingreei, 1927c. No. Amer. = *orionis* Treherne. Steinweden, 1933c.
pulchella, 1936f. Philippine Is.
pura, 1936c. So. Afr.
quinani, 1936c. So. Afr.
samoaensis, 1944. Samoa.
tahoei, 1927c. No. Amer. = *orionis* Treherne. Steinweden, 1933c.
ugandai, 1936c. So. Afr.
umtalii, 1930a. So. Afr.
varicornis, 1928d. Formosa = *setipennis* (Karny). Priesner, 1938. Treubia 16(4):510.
vulgatissimus americanus, 1929a. No. Amer. = *vulgatissimus* (Hal.). Type examined by writer and compared with authentic European specimens determined by Priesner.

Thrips aleuritis, 1933a. Tahiti.
anemonensis, 1936d. No. Amer. (Canada).
armata, 1936f. Philippine Is.
bremnerii, 1907. No. Amer. (Probably synonymous with *T. tabaci* Lind.; conversation with Hood, July 11, 1938). Type examined by writer and the suspected synonymy verified.
brevipilosa, 1927c. No. Amer.
clarus, 1928d. Formosa. (See also Steinweden and Moulton, 1930c).
dianthi, 1936d. No. Amer. (Canada).
flavidus Bagn. var *kyotoi*, 1928f. Japan.
frequens, 1938. So. Amer.
frosti, 1926d. No. Amer.
fusca, 1936f. Philippine Is. (Described as *Thrips tusca* and changed by Moulton in script on reprint received).
fuscus, 1936d. No. Amer. = *salvus* Moulton, 1946b.
(Ctenothripella) gillettei, 1926a. No. Amer. = *Microcephalothrips abdominalis* (D. L. Cwfd). Moulton, 1929f. Bailey, 1937.
gilmorei, 1929f. No. Amer.
gracilis, 1936d. No. Amer. (Canada).

gramineae, 1936d. No. Amer.
heraclei, 1926b. No. Amer.
herricki, var. *impatientis*, 1936b. No. Amer.
koitakii, 1940. New Guinea.
lathyri, 1936d. No. Amer.
leucaenae, 1942b. Guam.
madronii, 1907. No. Amer.
magnus, 1911. No. Amer.
mucidus, 1936d. No. Amer.
panicus, 1929g. Cuba and Hawaiian Is. = *Plesiothrips*. Hood, 1936e.
reticulatus, 1940. New Guinea.
saccharoni, 1928b. Hawaiian Is.
setipennis, S. and M., 1930c. China.
setosus, 1928f. Japan. Type examined by writer and found distinct from following species.
setosus, 1929d. India. = *Ramaswamiahiella subnudula* Karny, 1926. (Communication from Priesner, April 24, 1949). See also Ayyar, 1928. Mem. Dept. Agr. India, Ent. Ser. 10(7):266.
taraxaci, 1936d. No. Amer. = *trehernei* Pr. New synonymy. Type compared with specimen determined by Priesner.
(Epithrips) unispinus, 1940. New Guinea.
victoriensis, 1936f. Philippine Is.

Toxonothrips Moulton, 1927b. Genotype: *Toxonothrips graminae*, by original designation.

Toxonothrips graminae, 1927b. No. Amer.

Tryphactothrips ipomoeae, 1933b. So. Amer.

LIST OF TUBULIFERA Described by Dudley Moulton

Acallurothrips latus, 1944. Fiji.

Acanthothrips doaneii, 1907. No. Amer. = *Phlaeothrips nodicornis* Reuter, 1880. Karny, 1912. Zoo. Ann. 4:3. Hood, 1915e. Pr., 1928. Thys. Eur., p. 640. Type examined and is very close to a male of *nodicornis* from Czechoslovakia (det. by J. Pelikan).

Adrothrips Moulton, 1942a. Genotype: *Adrothrips aureus*, by original designation.
aureus, 1942a. Australia.

Agnostothrips Moulton, 1947b. Genotype: *Agnostothrips semiflavus*, by original designation.

Agnostothrips semiflavus, 1947b. New Guinea.

Anactinothrips fuscus, 1933f. So. Amer.

Androthrips flavitibia, 1933g. India.

Austrothrips flavitibia, 1940. New Guinea.
vanuaensis, 1944. Fiji.

Bactrothrips (Bactridothrips) guineaensis, 1947b. New Guinea.
natalensis, 1930b. So. Afr.

Bagnalliella flavipes, 1940. New Guinea.

Bolothrips artocarpi, 1942b. Guam. (See also Moulton, 1939).
biformis, 1939. Tahiti.

nigra M. and S., 1932a. Marquesas Is.
semiflavus, 1939. Rapa Is. (So. E. Polynesia).

Brithothrips Moulton, 1942a. Genotype: *Brithothrips fuscus*, by original designation.
fuscus, 1942a. Australia.

Campulothrips Moulton, 1944. Genotype: *Campulothrips gracilis*, by original designation.
gracilis, 1944. Fiji.

Carcinothrips Moulton, 1929h. Genotype: *Carcinothrips leai*, by original designation.
leai, 1929h. Australia.

Carientothrips Moulton, 1944. Genotype: *Bolothrips (Carienotothrips) fijiensis*, by original designation.

Carientothrips fijiensis, 1944. Fiji.

Cephalothrips elegans, 1929f. No. Amer. Type examined. Moulton has transferred this and following species to *Karnyothrips* in unpublished notes.
venustus, 1941. So. Amer. = *errans*. This new synonymy was called to my attention by Mr. Moulton in conversation Feb. 7, 1948.

Cercothrips niger, 1928c. Abyssinia. (Described in *Idolothrips* and changed by Moulton in script on reprint received.)

Chelaeothrips fuscus, 1944. Fiji.

Choleothrips Moulton, 1927a. Genotype: *Choleothrips geijerae*, by original designation.

Choleothrips geijerae, 1927e. Australia.

Cryptothrips constans M. and S., 1933e. Marquesas Is.
latus Uzel var. *fijiensis*, 1944. Fiji.
magnus, 1928d. Formosa.
niger, M. and S., 1933e. Marquesas Is. = *Dichaetothrips sitidens* (Moulton). Moulton, 1939, 1944.

Diceratothrips princeps, 1947. No. Amer. (Mexico).

Dichaetothrips beesoni, 1928a. India.
claripennis, 1934. Hawaiian Is.
mandiocae, 1941. So. Amer.

Dinothrips gardneri, 1928a. India.
juglandis, 1933g. India.
malloti, 1933g. India.

Diploacanthothrips Moulton, 1933c. Genotype: *Diploacanthothrips fuscus*, by original designation. = *Phrasterothrips*. Hood, 1936e.
fuscus, 1933c. So. Amer. = *Phrasterothrips*.

Diplochelaeothrips Moulton, 1944. Genotype: *Diplochelaeothrips mikrommatos*, by original designation.

Diplochelaeothrips mikrommatos, 1944. Fiji.

Docessissophothrips animus, 1929f. No. Amer. = *Megalothrips picticornis* Hood, Hood, 1931b.

Dolerothrips (?) *geijerae*, 1927a. Australia. = *Moultonia*. Bagnall, 1929. Marcellia 25:199-200.

Dolichothrips fuscipes, 1927b. New Guinea.

Dunatothrips Moulton, 1942a. Genotype: *Dunatothrips armatus*, by original designation.

armatus, 1942a. Australia.

Ecacanthothrips guineaensis, 1947b. New Guinea.

leai, 1947. Malay Peninsula.

Elaphrothrips albospinosus, 1929e. No. Amer. (Mexico).

genaspinosus, 1928c. Abyssinia.

gracilis, 1933f. So. Amer.

herricki, 1933f. So. Amer.

oculatus, 1928c. Abyssinia.

spinosus, 1933f. So. Amer.

unicolor. 1933f. So. Amer.

Emprosthiothrips Moulton, 1942a. Genotype: *Emprosthiothrips niger*, by original designation.

niger, 1942a. Australia.

Eothrips bursariae, 1927a. Australia = *Neocecidothrips*. Bagnall, 1929. Marcellia 25:186-187.

Euoplothrips armatus, 1940. New Guinea.

Eurythrips cornutus, 1929g. Cuba.

flavacinctus, M. and A., 1936e. No. Amer.

fuscipennis, 1929g. Cuba.

varius, 1929g. Cuba.

Exophthalmothrips longipennis, 1933. So. Amer.

Formicothrips yosemitae, 1929a. No. Amer. = *Oedaleothrips*. Hood, 1936e.

Galactothrips Moulton, 1933f. Genotype: *Galactothrips diversicolor*, by original designation.

diversicolor, 1933f. So. Amer.

Gastrothrips fijiensis, 1944. Fiji.

Gigantothrips rossi, 1947a. No. Amer. (Mexico).

venapennis, 1948d. Formosa.

Gluphothrips Moulton, 1944. Genotype: *Gluphothrips varicolor*, by original designation.

varicolor, 1944. Fiji.

Gomphiothrips Moulton, 1933f. Genotype: *Gomphiothrips tibouchinae*, by original designation.

tibouchinae, 1933f. So. Amer.

Gynaikothrips abnormis, 1944. Fiji.

armatus, 1944. Fiji.

caseariae, 1933g. India.

citricornis, 1928d. Formosa = *Smerinthothrips*. Takahashi, 1936. Philip. Jour. Sc. 60(4):443-444.

citritibia, 1940. New Britain.

claripes, 1944. Fiji.

flaviantennatus, 1929d. India.

flavitibia, 1929d. India.

fuscus, 1944. Fiji.

kannani, 1929c. India.
kuwanai, 1928f. Formosa. = *Smerinthothrips*. Takahashi, 1936. Ibid.
kuwayamai, 1928d. Formosa. = *Smerinthothrips*. Ibid.
liliaceae, 1928f. Formosa. = *Smerinthothrips*. Ibid.
magnafemora, 1944. Fiji.
magnus, 1944. Fiji.
monsterae, 1940. New Guinea.
novi oris, 1944. Fiji.
orchidis, 1927c. Philippine Is.
praelongitubus, 1940. New Guinea.
rotundus, 1928d. Formosa. = *Litotetothrips*. Takahashi, 1936. Ibid.
takahashii, 1928f. Formosa. = *Smerinthothrips*. Ibid.
tenuicornis, 1944. Fiji.
yuasai, 1928f. Formosa. = *Smerinthothrips*. Ibid.

Hapliothrips citricornis, 1940. New Guinea.

Haplothrips aethiopiae, 1928c. Abyssinia.
biformis, 1928c. Abyssinia.
colombiensis, 1933f. So. Amer.
cooperi, 1928c. Abyssinia.
fusca, 1928b. Hawaiian Is.
(Karnyothrips) fuscipennis, 1928f. Formosa.
(Chonothrips) gaviotae, 1929a. No. Amer.
phyllanthi, 1942b. Guam.
ryani, 1929a. No. Amer.
(Hindsiana) sakimurai, 1937b. Hawaiian Is.
shacklefordi, 1927c. No. Amer.
(Karnyothrips) tenuis, 1938. So. Amer.
trellesi, 1935c. So. Amer.
(Hindsiana) williamsi, 1934. Hawaiian Is.
wouramboulchii, 1928c. Abyssinia.

Heptathrips Moulton, 1942a. Genotype: *Heptathrips tonnoiri*, by original designation.
tonnoiri, 1942a. New Zealand.

Holopothrips certus, 1938. So. Amer.
pennatus, 1928. So. Amer.

Hoplothrips bahiaensis, 1933c. So. Amer.
brasiliensis, 1938. So. Amer.
coprosmae, 1936b. Hawaiian Is.
dallasi, 1933c. So. Amer.
elongatus, 1929e. No. Amer. (Mexico).
ferrisi, 1929e. No. Amer. (Mexico).
fijiensis, 1944. Fiji.
flavitibia, 1928b. Hawaiian Is.
flavus M. and A., 1936e. No. Amer.
fungosus, 1928d. Formosa.
hawaiiensis, 1936b. Hawaiian Is.
kincaidi, 1929f. No. Amer.
mauiensis, 1928b. Hawaiian Is.
mexicanus, 1929e. No. Amer. (Mexico).

paumalui, 1937b. Hawaiian Is.
psidii, 1933c. So. Amer.
quercus, M. and A., 1936e. No. Amer.
swezeyi, 1928b. Hawaiian Is.

Horistothrips claruspilus, 1944. Fiji.
fuscus, 1944. Fiji.
magnafemora, 1944. Fiji.
palidispinosus S. and M., 1930c. China.

Ischnothrips Moulton, 1944. Genotype: *Ischnothrips zimmermani*, by original designation.
zimmermani, 1944. Fiji.

Kentronothrips Moulton, 1928b. Genotype: *Kentronothrips hawaiiensis*, by monotypy. = *Podothrips*. Priesner, 1938. Bul. Soc. Roy. Ent. Egypt., p. 68.
hawaiiensis, 1928b. Hawaiian Is. = *Podothrips lucasseni* (Kruger), 1890. Priesner, 1938. Ibid.

Kladothrips augonsaxxos, 1927a. Australia.

Leeuwenia fijiensis, 1944. Fiji.
spinosus, 1944. Fiji.

Leptoliothrips Moulton, 1927c. Genotype: *Leptoliothrips manilae*, by original designation.
manilae, 1927c. Philippine Is.

Leptothrips zimmermani, 1939. Tahiti.

Liotetothrips guineaensis, 1940. New Guinea. = *Litotetothrips*. Lapsus calami.

Liothrips anonae, 1933c. So. Amer.
atratus, 1935a. Australia.
bondari, 1933c. So. Amer.
bosei, 1928a. India.
brasiliensis, 1933c. So. Amer.
claripennis, 1933c. So. Amer.
colimae, 1929e. No. Amer. (Mexico).
condei, 1933c. So. Amer.
corni, 1926a. No. Amer.
distinctus, 1938. So. Amer.
flavipes, 1928c. Abyssinia.
flavitibia, 1933g. India.
gardneri, 1933g. India.
jazykovi, 1946a. Turkestan.
kurosawai, 1937a. Japan.
laingi, 1928c. Abyssinia.
litsaeae, 1933g. India.
malloti, 1928d. Formosa = *brevitubus*, Karny, 1912. Takahashi, 1936. Philip. Jour. Sc. 60(4):446.
malloti var. *flavicornis*, 1928d. Formosa. = *brevitubus* var. *flavicornis* Ibid.
mendesi, 1933c. So. Amer.
nigripes, 1928c. Abyssinia.
peruviensis, 1933c. So. Amer.

praelongus, 1940. New Guinea.
querci, 1929e. No. Amer. (Mexico).
salti, 1933c. So. Amer.
terminaliae, 1928d. Formosa.
unicolor, 1933c. So. Amer.
vernoniae, 1933c. So. Amer.

Lispothrips birdi, 1929i. No. Amer. (Canada).
populi, 1929i. No. Amer. (Canada).
varicornis, 1929f. No. Amer.

Lissothrips flavitibia, 1944. Fiji.

Machatothrips artocarpi, 1928d. Formosa.
celosia, 1928d. Formosa.
quadrudentatus, 1947b. New Guinea.

Macrophthalmothrips flavafemora, 1947b. New Guinea.
gracilis, 1944. Fiji.
hawaiiensis, 1928b. Hawaiian Is.
usingeri, 1942b. Guam.

Mallothrips flavipes, 1940. New Guinea.

Mathetethrips Moulton, 1939. Genotype: *Mathetethrips megacephalus*, by original designation.
megacephalus, 1939. Rapa Is. (S. E. Polynesia.).

Megalothrips hesperus, 1907. No. Amer. = *Megathrips*. Karny, 1919. Zeitschr. Wiss. Insec.-Biol. (Berlin) 1:107-108.

Mesothrips citritibiae, 1940. New Guinea.
claripennis, 1928d. Formosa.
guamensis, 1942b. Guam.
malloti, 1928a. India.
setidens, 1928b. Hawaiian Is. = *Dichaetothrips*. Moulton, 1944.
swezeyi, 1942b. Guam.

Neoheegeria flavipes, 1928d. Formosa. = *Dolichothrips*. Takahashi, 1936.
hibisci, 1933a. Moorea, Soc. Is.
longus, 1944. Fiji.
macarangai, 1928d. Formosa. = *Dolichothrips*. Takahashi, 1936. Ibid.
nevskyi, 1946a. Turkestan.

Oidanothrips Moulton, 1944. Genotype: *Oidanothrips magnus*, by monotypy.
magnus, 1944. Fiji.

Paracryptothrips Moulton, 1944. Genotype: *Paracryptothrips inermis*, by original designation.
fijiensis, 1944. Fiji.
inermis, 1944. Fiji.

Parateuchothrips Moulton, 1944. Genotype: *Parateuchothrips fuscus*, by original designation.
fuscus, 1944. Fiji.

Phaulothrips fuscus, 1935a. Australia.

Phlaeothrips claratibia, 1937b. Hawaiian Is.
(Hoplandrothrips) cooperi, 1928c. Abyssinia.

(Hoplandrothrips) flavitibia, 1944. Fiji.
(Hoplandrothrips) flavitibia var. *fuscus*, 1944. Fiji.
(Phlaeothrips) mauiensis, 1928b. Hawaiian Is.
(Hoplandrothrips) orientalis, 1927c. No. Amer., San Francisco. (Intercepted from China.)
(Hoplandrothrips) sides, 1933f. So. Amer.

Podothrips fuscus, 1939, Rapa Is. (So. E. Polynesia).
monsterae, 1940. New Guinea.

Poecilothrips biformis, 1934. Hawaiian Is. = *Polyporothrips*. Moulton, 1936b.
lupini, 1929a. No. Amer. Type examined. Very close if not identical with *albopictus* Uzel.

Probolothrips Moulton, 1941. Genotype: *Probolothrips hambletoni*, by original designation.
hambletoni, 1941. So. Amer.

Rhaebothrips fuscus, 1942b. Guam.

Rhynchothrips ampelopsidis, 1927c. No. Amer.
brevitubus, 1929e. No. Amer. (Mexico).
fuscus, S. and M., 1930c. China.
machili, 1928d. Formosa.
versicolor, 1929f. No. Amer.

Sedulothrips brevispinosus, 1933f. So. Amer.

Spilothrips Moulton, 1942a. Genotype: *Spilothrips varicolor*, by original designation.
varicolor, 1942a. Australia.

Sunaitiothrips Moulton, 1942a. Genotype: *Sunaitiothrips fuscus*, by original designation.
fuscus, 1942a. Australia.

Symphyothrips potosiensis, 1947a. No. Amer. (Mexico).

Tetragonothrips Moulton, 1940. Genotype: *Tetragonothrips murmekiai*, by original designation.
murmekiai, 1940. New Guinea.

Thorybothrips yuccae, 1929f. No. Amer.

Trichothrips dens, 1907. No. Amer. = *Poecilothrips*. Bailey, 1935. See also Karny, 1922. Denkschr. Akad. Wiss. Wien 10:125.
femoralis, 1907. No. Amer. = *Neoheegeria verbasci* (Osb.). Hood, 1918c. Priesner, 1928. Thys. Eur., p. 631.
ilex, 1907. No. Amer. = *Rhynchothrips*. Moulton, 1927c. Bailey, 1936. Jour. Ec. Ent. 29(6):1114.

Trichothrips ilex dumosa, 1907. No. Amer. = *Liothrips dumosa*. Hood, 1918c.
ruber, 1911. No. Amer. = *Haplothrips*. Hood, 1918c.

Trybomia brevitubus, 1929e. No. Amer. (Mexico). (Described in *Dicerato-thrips* and changed by Moulton in script on reprint received.)
mendesi, 1933c. So. Amer.

Watsoniella brevituba, 1928c. Abyssinia.
flavipes, 1928c. Abyssinia.

REPORT OF THE TREASURER-BUSINESS MANAGER

For the Year Ending December 1, 1948

RECEIPTS

Balance on hand December 13, 1947	$ 107.62
From subscriptions to THE FLORIDA ENTOMOLOGIST	162.75
Membership dues (current and back)	374.50
Sale of back issues of THE FLORIDA ENTOMOLOGIST	336.18
From members for reprints, plates, etc.	98.00
From advertising in THE FLORIDA ENTOMOLOGIST	222.75
Miscellaneous receipts	14.14
TOTAL	$1,315.94

EXPENDITURES

Cost of printing THE FLORIDA ENTOMOLOGIST	$ 924.75
Wayside Press (1947 outstanding bill)	10.75
Postage, stationery, and other supplies	141.50
Exchange on checks and money orders	6.66
Miscellaneous	5.50
TOTAL	$1,089.16
Balance on hand December 1, 1948	$226.78

ASSETS NOT SHOWN

Credit Chesnut Office Equipment Company	$ 10.00
Due from members for plates, reprints, etc.	48.86
Due from advertising	72.75
TOTAL	$131.61

LIABILITIES

Pepper Printing Company	$ 1.00
University of Florida Duplicating Department	15.25
TOTAL	$ 16.25

Respectfully submitted,

GEORGE W. DEKLE
Treasurer-Business Manager

Approved December 1, 1948

DR. I. J. CANTRALL
DR. D. O. WOLFENBARGER
MR. SAM B. HOPKINS
Auditing Committee

NOTICE OF ANNUAL MEETING

The executive committee has decided to cancel plans for the Sanford meeting so that the Florida Entomological Society can meet jointly with the American Association of Economic Entomologists and the Entomological Society of America in Tampa, Florida, December 13-16.

It is now planned to have a short business meeting sometime during the session for the election of new officers and the discussion of new business. There will be no other special meetings of the Florida Entomological Society.

Anyone who has planned to present the results of his research at the regular 1949 meeting of the Florida Entomological Society should send the title of his paper, the time required, and equipment needed, to the Secretary, Dr. Lewis Berner, Department of Biology, University of Florida, Gainesville. Dr. Berner will forward this information to the appropriate national secretary for inclusion in the program of either the Association of Economic Entomologists or the Entomological Society. No papers will be read before the Florida Entomological Society sitting as a separate group.

Arrangements for room reservations in Tampa may be made through Mr. A. K. Dickenson, Director of Convention and Tourist Bureau, P. O. Box 420, Tampa, Florida. It is suggested that reservations be made without delay.

LEWIS BERNER, *Secretary*

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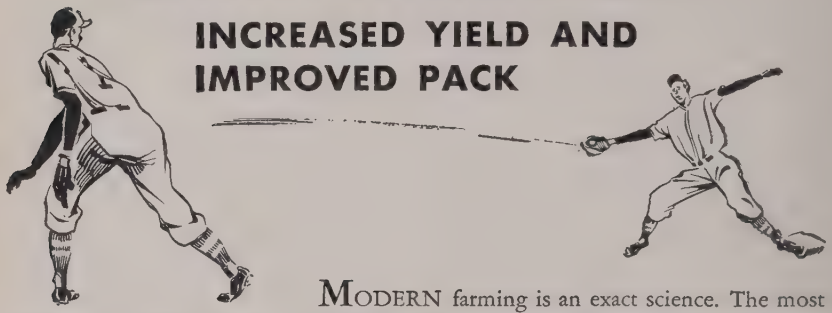

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Commercial use of THIOPHOS Insecticides in 1948 confirmed the outstanding results obtained experimentally in 1947.

Such insects as aphids, mites, beetles, mealy bugs, and thrips are among the more important pests which are easily and economically killed with Wettable Powders and Dilute Dusts containing THIOPHOS Parathion.

THIOPHOS Insecticides are supplied by well-known manufacturers under their own brand names. Select one of these reliable manufacturers as your source of supply and discuss with an accredited representative your insect problem. Do the same with Federal and State Agricultural experts in your locality.

AMERICAN Cyanamid COMPANY

AGRICULTURAL CHEMICALS DIVISION
BREWSTER, FLORIDA

TOXAPHENE

(CHLORINATED CAMPHENE 67-69% Chlorine)

SOLUBILITY OF TOXAPHENE IN COMMON SOLVENTS

SOLVENT	POUNDS OF TOXAPHENE PER GALLON OF SOLVENT AT 27° C.
ACETONE	OVER 40
BENZENE	OVER 40
CARBON TETRACHLORIDE	OVER 40
ETHYLENE DICHLORIDE	OVER 40
FUEL OIL	20-25
HEXANE	OVER 40
KEROSENE (REGULAR)	OVER 25
KEROSENE (DEODORIZED)	OVER 25
LUBE OIL	5-7
SHELL E-407	OVER 25
SOLVACIDE 544C	OVER 25
SUN SOLVENT 1547	OVER 25
THANITE®	8-10
TOLUENE	OVER 40
WHITE OIL 50	4-5

HERCULES

FOR AGRICULTURAL INSECTICIDES

Toxaphene is a synthetic organic insecticide toxicant, chlorinated camphene containing 67-69% Cl, developed by Hercules primarily for use in agricultural insecticides. It is an amber-colored, waxy solid with a mild odor suggestive of both chlorine and camphor.

Dusts and sprays based on toxaphene have been effective experimentally against more than 50 species of economically important insect pests. Hercules toxaphene is economically priced and easy to work with. It is readily soluble in non-polar organic solvents, as shown in the table at the left. This property can facilitate the preparation of experimental formulations, particularly concentrate-type sprays.

For specific technical information on toxaphene, either its insecticidal merits or its physical and chemical properties, we suggest you get in touch with us.

HERCULES POWDER COMPANY
INCORPORATED
991 Market Street, Wilmington 99, Delaware

"THANITE" IS REG. U. S. PAT. OFF.

PROTECTION PLUS—

BLACK LEAF 40

KILLS The APHIDS but SPARES Lady Beetles and other beneficial insects

BLACK LEAF 40 FIGHTS ON YOUR SIDE TWO WAYS

PROTECTS THE GARDEN
against the myriads of sucking insects which swarm almost overnight. Non-caustic. Leaves no stain on flowers, foliage or fruit.

PROTECTS THE ORCHARD
Black Leaf 40 controls aphids that deform foliage and fruit, and leafhoppers that devitalize foliage. Compatible with other standard spray materials.

DELOUSES POULTRY—
by means of Cap-Brush Applicator found in each small package. Just tap on roosts. Black Leaf 40 fumes kill body lice while chickens roost.

THE "OLD RELIABLE" DIP AND DRENCH
Black Leaf 40 controls stomach worms of sheep and goats, and used as a dip, controls certain pests on livestock.

Aphids and other similar insects would over-run the world, were it not for the fact that they have enemies which constantly prey upon them. Lady beetles, aphid lions, lace-wing flies and similar beneficial insects are essential in maintaining nature's balance.

Spraying with Black Leaf 40 kills the aphids *without destroying beneficial insects* that fight on the side of mankind. Use it, and *differentiate* between your insect *friends* and insect *enemies*, for added crop protection.

Kills two ways—by contact and by fumes. Black Leaf 40 kills aphids, leafhoppers, mealy bugs, most thrips, leaf-miners, and similar insects.

ONE PRODUCT — MANY USES
Black Leaf 40 is "the old standby"—for controlling various plant, poultry and animal parasites. Used the year 'round. Keep it handy for quick results. Directions on package.

LOOK FOR THE LEAF ON THE PACKAGE

4801A

Black Leaf

A GREAT NAME IN INSECTICIDES

Black Leaf 40
Black Leaf 155
Black Leaf Mosquito-fumer
Black Leaf Powder
Black Leaf Dry Concentrate
And Other Nicotine-Base Products

TOBACCO BY-PRODUCTS & CHEMICAL CORPORATION LOUISVILLE 2, KENTUCKY